December 1976 Number 388-Part I

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Data for November 1976–October 1976

Explanation of Data Reports Issued as Number 378 (Supplement) February 1976

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Solar - Geophysical Data

NO. 388 DECEMBER 1976

Part I (Prompt Reports)

DATA FOR
NOVEMBER 1976
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BOULDER, COLORADO

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No. 388

Issued in two parts

Hope I. Leighton, Editor

J. Virginia Lincoln, Director
Solar - Terrestrial Data Services Division

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Note: A = Part 1, B = Part II.

374A 28 listed under 1975 Aug shows that data for August 1975 were contained in *Solar-Geophysical Data* Number 374 - Part I beginning on page 28.

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ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

NOVEMBER 1976

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions				Outstanding events	Forecasts			Alert Situations
						Location Lat-Long	No. of Flares Total	M	X		Date	Location Lat-Long	Desc*	
306	1	31	00	72	22	-	-	-	-		1	SPOTNIL		SOLQUIET MAGALERT 01/01
307	2	01	00	72	09	-	-	-	-		2	SPOTNIL		SOLQUIET MAGNIL
308	3	02	00	70	06	-	-	-	-		3	SPOTNIL		SOLQUIET MAGQUIET
309	4	03	00	71	05	-	-	-	-		4	SPOTNIL		SOLQUIET MAGQUIET
310	5	04	00	71	03	-	-	-	-		5	SPOTNIL		SOLQUIET MAGQUIET
311	6	05	00	72	03	-	-	-	-		6	SPOTNIL		SOLQUIET MAGQUIET
312	7	06	00	71	02	-	-	-	-		7	SPOTNIL		SOLQUIET MAGQUIET
313	8	07	00	71	03	-	-	-	-		8	SPOTNIL		SOLQUIET MAGQUIET
314	9	08	00	71	04	-	-	-	-		9	SPOTNIL		SOLQUIET MAGQUIET
315	10	09	00	72	08	-	-	-	-		10	SPOTNIL		SOLQUIET MAGALERT MINOR RECURRENCE 11/14
316	11	10	00	71	17	-	-	-	-		11	SPOTNIL		SOLQUIET MAGALERT MINOR RECURRENCE 11/14
317	12	11	00	72	17	-	-	-	-		12	SPOTNIL		SOLQUIET MAGALERT RECURRENCE 12/14
318	13	12	00	72	17	-	-	-	-		13	SPOTNIL		SOLQUIET MAGALERT RECURRENCE 13/14
319	14	13	00	71	20	-	-	-	-		14	SPOTNIL		SOLQUIET MAGALERT 14
320	15	14	00	71	14	-	-	-	-		15	SPOTNIL		SOLQUIET MAGNIL
321	16	15	00	73	08	-	-	-	-		16	SPOTNIL		SOLQUIET MAGQUIET
322	17	16	00	72	05	-	-	-	-		17	SPOTNIL		SOLQUIET MAGQUIET
323	18	17	11	75	06	N13E72	0	0	0		18	N13E72	E	SOLQUIET MAGQUIET
324	19	18	18	77	03	N10E60 N22W90	0 0	0 0	0 0		19	N10E60 N22W90	E Q	SOLQUIET MAGQUIET
325	20	19	20	78	06	N12E45	0	0	0		20	N12E45	E	SOLQUIET MAGQUIET
326	21	20	12	75	05	N11E30	0	0	0		21	N11E30	E	SOLQUIET MAGQUIET
327	22	21	11	75	01	N11E15	0	0	0		22	N11E15	Q	SOLQUIET MAGQUIET
328	23	22	18	75	04	N12E03	0	0	0		23	N12E03	Q	SOLQUIET MAGQUIET
329	24	23	13	74	03	N11W09	0	0	0		24	N11W09	Q	SOLQUIET MAGQUIET
330	25	24	11	75	04	N11W22	0	0	0		25	N11W22	Q	SOLQUIET MAGQUIET
331	26	25	11	75	09	N11W34	0	0	0		26	N11W34	Q	SOLQUIET MAGALERT MINOR 26/27
332	27	26	11	74	07	N11W47	0	0	0		27	N11W47	Q	SOLQUIET MAGALERT MINOR 27
333	28	27	11	76	07	N11W59	0	0	0		28	N11W59	Q	SOLQUIET MAGALERT MINOR 28
334	29	28	11	74	02	N11W74	0	0	0		29	N11W74	Q	SOLQUIET MAGNIL
335	30	29	11	72	05	N11W87	0	0	0		30	N11W87	Q	SOLQUIET MAGQUIET
336	01	30	00	72	07	-	-	-	-		01	SPOTNIL		SOLQUIET MAGQUIET

* Q=Quiet E=Eruptive A=Active P=Proton C=Caution D=Doubtful O.G.=Other Groups MF=Major Flare

RELATIVE SUNSPOT NUMBERS

ZURICH, R_z

1975 FINAL 1976 PROVISIONAL

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	7	0	0	0	26	35	0	9	10	17	31	7
2	23	0	0	0	25	26	0	8	16	20	28	0
3	20	0	0	0	22	25	0	14	19	12	36	0
4	23	0	0	0	13	8	0	8	14	11	32	0
5	21	0	0	0	12	22	0	8	17	17	25	0
6	18	0	0	10	9	10	0	10	15	10	24	0
7	20	0	0	12	0	10	0	7	26	9	30	0
8	18	0	0	7	0	9	11	0	30	9	7	0
9	8	0	0	10	8	8	10	0	31	18	14	0
10	0	0	0	12	10	10	7	0	24	22	0	0
11	0	0	0	13	15	16	7	0	22	24	0	0
12	0	20	0	13	17	17	8	0	29	20	14	0
13	0	26	13	13	17	23	8	0	27	12	17	0
14	7	36	16	22	19	30	15	0	16	10	25	0
15	7	23	14	16	19	17	18	0	8	16	27	7
16	7	22	11	11	19	12	12	0	15	14	32	7
17	9	24	8	30	24	18	18	0	19	8	36	14
18	8	20	15	45	27	8	24	0	23	8	28	20
19	7	18	10	51	27	20	23	0	25	7	21	13
20	0	16	12	51	30	20	17	0	19	0	20	12
21	0	11	8	48	39	14	30	0	17	0	15	8
22	0	10	7	36	20	7	31	0	8	0	18	13
23	0	10	0	28	17	15	23	0	9	7	34	11
24	18	0	7	25	16	8	26	0	17	7	33	10
25	14	0	0	22	17	0	19	0	9	16	32	9
26	8	0	0	42	28	7	19	0	14	17	30	9
27	0	7	7	46	23	0	9	0	7	18	26	8
28	0	0	0	50	21	0	16	0	8	18	21	8
29	0	14	0	42	26	0	11	0	9	25	17	8
30	0	8		32	38	0	10	0	10	31	9	0
31	0	0		27		0		0	9		0	
MEAN	7.8	5.5	4.6	23.0	19.5	12.7	12.4	2.1	16.9	13.4	21.8	5.5

1975 yearly mean = 15.5

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

1975 1976

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	72.1	72.1	68.6	67.7	79.6	77.6	69.4	69.3	75.9	76.3	74.6	70.9
2	74.8	71.2	68.6	68.1	76.8	74.2	67.9	69.1	77.8	75.3	73.9	69.1
3	74.3	71.3	68.4	67.4	76.1	71.9	68.1	69.5	82.3	75.7	73.8	69.8
4	74.1	71.8	68.4	67.4	74.7	71.5	68.4	68.6	82.3	75.9	73.1	69.9
5	77.4	71.9	67.6	67.6	73.0	71.1	68.7	69.5	84.2	75.4	74.8	70.9
6	75.8	71.7	68.1	67.5	71.3	69.9	69.3	69.6	84.3	73.1	74.7	69.7
7	73.7	71.6	69.3	67.9	70.3	70.3	69.0	69.5	83.7	73.0	74.5	69.5
8	76.0	70.9	68.4	67.9	71.9	70.2	70.7	69.7	82.0	72.9	74.6	69.3
9	73.3	69.4	68.3	68.2	74.1	70.6	70.1	69.7	82.8	73.2	74.8	70.7
10	73.3	70.5	68.5	68.4	75.3	71.7	71.0	70.1	82.8	75.8	74.9	69.4
11	74.3	72.1	68.4	68.8	77.1	72.5	71.4	70.2	80.4	75.7	73.7	70.5
12	73.4	76.9	67.8	68.9	78.1	72.6	71.7	69.8	80.6	75.7	73.3	70.8
13	72.8	80.0	69.7	70.9	79.6	73.6	72.0	69.8	78.7	74.3	72.6	69.4
14	71.8	82.1*	69.9	70.1	79.5	74.2	73.7	70.7	73.4	74.7	74.4	69.2
15	71.8	80.4	69.6	69.1	79.2	76.9	74.3	71.4	72.8	73.9	75.5	71.1
16	70.5	78.1	69.7	72.5	80.6	79.2	77.1	69.9	72.9	75.9	77.0	71.1
17	70.5	76.6	69.9	74.4*	80.5	76.5	77.1	69.4	77.8	76.5	78.0	72.8
18	69.6	76.7	70.1	79.0	80.5	75.6*	77.9	70.6	78.2	74.3	77.3	75.6
19	69.1	75.2	70.1	81.6*	79.8	73.8	76.9	70.2	76.1	73.3	76.0*	74.6*
20	69.7	74.6	70.0	85.0	80.0	73.0	76.9	69.4	74.5	72.2	75.9	72.9
21	69.0	72.1	68.8	91.2	78.0	74.0	77.7	70.1	73.2	70.9	73.5	73.2
22	68.9	70.9	68.9	83.0	76.2*	72.5	78.9	70.1	72.3	70.5	75.4	73.3
23	69.6	70.2	69.2	86.9	75.7	71.9	76.5	68.7	70.8	72.0	80.1	72.5
24	71.4	68.5	69.6	82.2*	76.8	70.8	75.2	69.4	70.9	72.5	80.1	72.9
25	71.0	69.2	69.4	85.1	75.7	69.8	74.9	68.8	70.6	73.4	84.7	72.7
26	71.8	68.2	68.5	84.1*	75.7	69.5	74.3	68.5	70.1	72.8	80.4	72.1
27	72.5	67.2	68.5	85.5	74.6	69.0	72.8	69.4	71.5	73.3	77.4	73.7
28	71.5	67.1	67.9	87.1*	73.4	69.0	71.8	69.4	72.5	73.6	73.9	71.7
29	72.5	67.4	67.4	84.0	79.6	68.0	71.3	69.4	73.3	71.9	72.1	69.7
30	71.9	68.9		82.4	79.5*	68.1	73.3	70.7	73.0	72.6	72.1	69.7
31	72.1	69.1		82.7		68.7		72.3	73.8		70.4	
MEAN	72.3	72.4	68.8	75.8	76.7	72.2	72.8	69.8	76.6	73.9	75.4	71.3

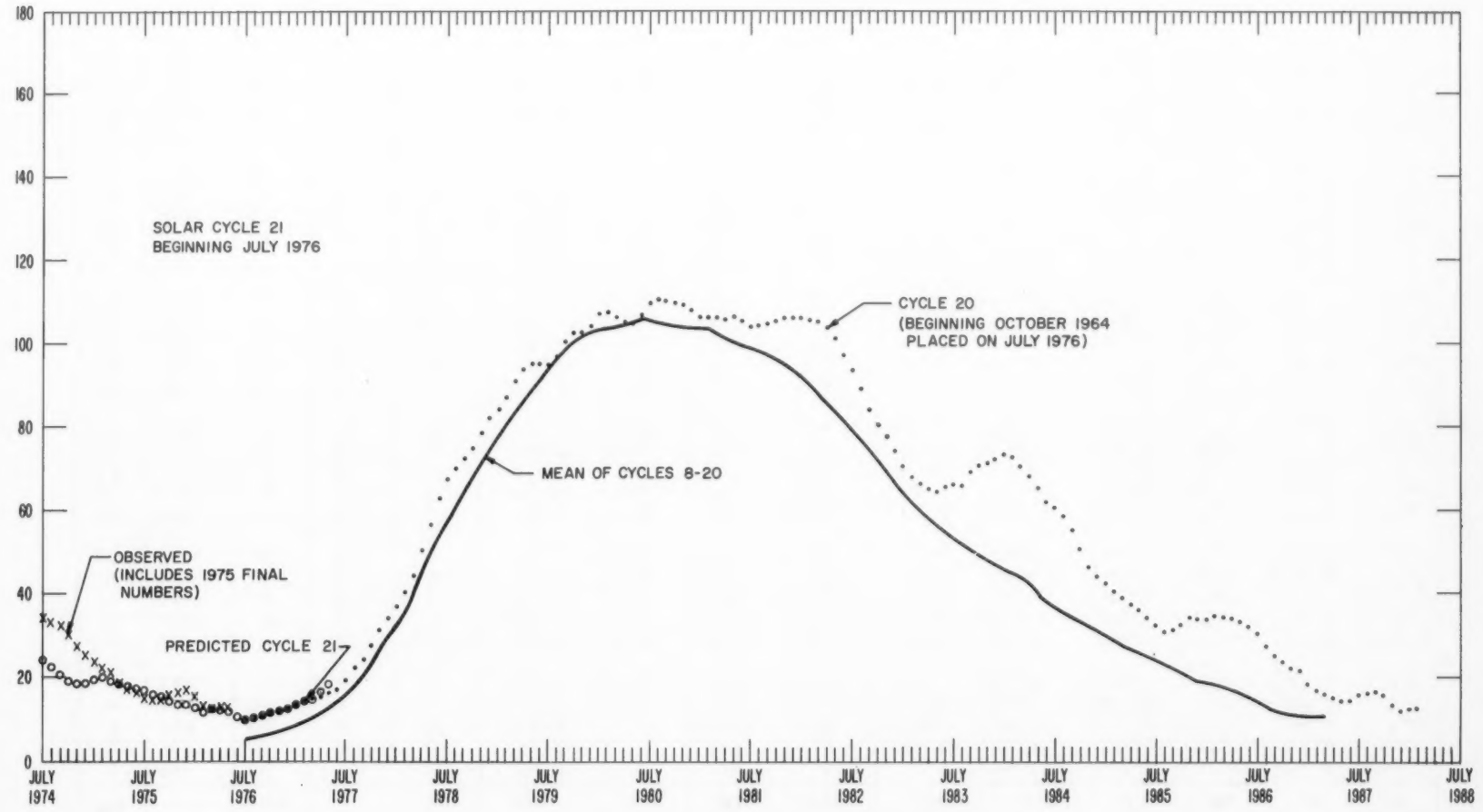
* adjusted for burst

DAILY SOLAR INDICES

NOVEMBER 1976

NOV 1976	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_Z	$R_{A'}$	OTTAWA 2800	AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	306	24	7	0	72.0		275	115	70.9	71.7	47.0	37.6	21.0	8.1
2	307	25	0	0	70.2		275	114	69.1	68.9	45.8	33.3	18.9	8.4
3	308	26	0	0	70.9		275	114	69.8	68.6	46.5	34.7	19.3	7.6
4	309	27	0	0	71.1	523	272	114	69.9	68.1	45.8	38.6	19.3	7.4
5	310	1	0	0	72.1	523	267	114	70.9	68.7	48.0	36.0	19.8	7.6
6	311	2	0	0	71.0	520	269	113	69.7	65.0	44.4	37.3	19.7	7.9
7	312	3	0	0	70.8	515	268	112	69.5	67.9	45.5	35.5	19.3	7.8
8	313	4	0	0	70.6	517	273	112	69.3	68.8	47.1	34.8	19.3	7.9
9	314	5	0	0	72.1	513	274	113	70.7	70.6	46.7	36.3	20.8	8.2
10	315	6	0	0	70.6	516	275	114	69.4	71.0	46.6	36.6	20.6	7.9
11	316	7	0	0	71.9	518	276	115	70.5	71.3	46.6	36.9	20.4	7.6
12	317	8	0	0	72.3	514	273	113	70.8	70.8	45.9	36.9	19.7	7.4
13	318	9	0	0	70.9	514	270	112	69.4	68.5	45.8	36.4	21.7	7.8
14	319	10	0	0	70.7	516	271	112	69.2	69.7	45.9	36.1	20.3	8.1
15	320	11	7	0	72.7	519	271	114	71.1	70.0	45.5	37.0	20.0	7.4
16	321	12	7	0	72.7	523	275	114	71.1	71.3	46.8	37.1	19.8	7.8
17	322	13	14	9	74.5	518	276	115	72.8	72.7	46.9	36.7	18.8	8.1
18	323	14	20	11	77.4	513	277	117	75.6	75.2	48.1	38.8	22.7	8.3
19	324	15	13	10	76.4*	520	280	118	74.6*	75.1	49.0	46.3	23.5	18.9
20	325	16	12	11	74.7	516	278	117	72.9	71.6	48.8	39.5	22.7	9.8
21	326	17	8	10	75.0	523	278	120	73.2	69.8	51.2	40.4	21.0	8.6
22	327	18	13	12	75.2	521	276	121	73.3	71.3			20.0	8.1
23	328	19	11	10	74.4	518	276	120	72.5	71.0	47.5	41.1	20.5	7.9
24	329	20	10	9	74.8	525	274	118	72.9	71.8	47.5	38.5	23.3	8.7
25	330	21	9	10	74.6	519	274	114	72.7	70.1	46.7	38.6	23.5	8.1
26	331	22	9	10	74.0	524	275	116	72.1	69.1	46.9	39.0	22.4	8.3
27	332	23	8	8	75.7	523	273	117	73.7	71.9	48.4	36.9	22.0	8.0
28	333	24	8	9	73.7	520	273	118	71.7	71.4	46.8	38.0		7.2
29	334	25	8	9	71.6	523	275	117	69.7	69.5	45.7	36.8	22.8	7.8
30	335	26	0	0	71.7	525	276	116	69.7	68.9	45.5	36.7	24.1	8.0
MEAN			5.5	4.3	72.9	519	274	115	71.3	70.3	46.9	37.5	20.9	8.4

* Adjusted for burst.



PREDICTED AND OBSERVED SUNSPOT NUMBERS

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15.5	13.4	12.5	13.0	12.9	10.1 (--)	10.0 (--)	10.3 (1)	10.9 (1)	11.5 (2)	12.1 (3)	12.6 (3)
1977	13.6 (4)	14.5 (5)	15.3 (7)	16.8 (8)	18.4 (10)	19.7 (12)	21.7 (14)	24.1 (17)	27.2 (20)	30.8 (23)	33.9 (26)	36.5 (29)
1978	39.4 (32)	42.8 (36)	46.3 (40)	50.3 (43)	54.6 (47)	59.5 (52)	63.8 (55)	66.9 (59)	69.4 (62)	71.7 (65)	73.1 (66)	79.8 (68)
1979	84.4 (71)	88.2 (74)	93.0 (77)	97.3 (79)	100.1 (81)	102.0 (83)	104.1 (87)	107.0 (90)	109.4 (92)	110.5 (93)	110.4 (94)	110.3 (94)
1980	109.7 (93)	108.7 (90)	109.0 (87)	110.4 (84)	112.0 (83)	113.3 (83)	114.4 (79)	115.0 (76)	114.6 (73)	114.4 (70)	114.7 (70)	114.9 (69)
1981	116.5 (69)	119.2 (70)	118.2 (70)	114.6 (68)	111.7 (66)	110.2 (64)	109.5 (62)	110.0 (60)	111.4 (59)	112.4 (58)	112.3 (57)	111.0 (54)
1982	108.2 (51)	104.1 (49)	101.5 (47)	100.0 (46)	98.6 (44)	96.6 (42)	93.3 (41)	88.5 (39)	83.5 (37)	80.4 (33)	75.7 (29)	72.8 (27)
1983	69.8 (26)	67.2 (25)	65.8 (24)	65.1 (23)	64.3 (23)	63.1 (22)	61.6 (23)	61.7 (22)	62.5 (22)	62.4 (23)	62.3 (24)	62.0 (25)
1984	61.5 (25)	60.4 (25)	58.4 (25)	55.8 (24)	53.0 (24)	50.9 (26)	50.0 (27)	48.1 (28)	45.6 (29)	44.1 (28)	42.8 (26)	41.6 (25)
1985	41.0 (24)	40.0 (23)	38.6 (23)	37.6 (22)	37.1 (22)	36.2 (22)	34.6 (21)	33.1 (20)	32.1 (19)	31.3 (19)	30.8 (19)	29.7 (20)
1986	29.2 (20)	29.8 (20)	29.9 (19)	29.2 (18)	27.8 (17)	26.3 (16)	25.0 (15)	23.5 (15)	22.3 (14)	21.5 (13)	20.7 (11)	20.3 (10)
1987	19.4 (8)	18.3 (8)	17.6 (8)	17.4 (9)								

For each month, the upper figure is the observed or predicted Zürich smoothed sunspot number. The lower figure in parenthesis is the corresponding absolute value of the 90% prediction interval, an indication of the uncertainty above and below the predicted number. Observed numbers are those with no prediction intervals. The observed smoothed sunspot numbers are based on final Zürich numbers through 1975.

The predicted sunspot numbers are derived from a regression analysis based on cycles 8 through 20. Tests indicate that earlier cycles are from a different statistical population.

This prediction for the new sunspot cycle is based on an assumption that sunspot minimum occurred in July 1976 with a smoothed number of 10. The predictions will be changed after sunspot minimum has been observed.

Hα SOLAR FLARES

NOVEMBER 1976

OBSERVATORY	OBSERVED UT				LOCATION					DURATION — MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY			COORD.	TYPE	TIME — UT	MEAS. AREA Millionths of Disk	CORR. AREA Sq. Deg.	
HTPR	17	1038	1044	1048	N14	E80	.987		23.4	10	SF		C	1044	40		D
HTPR	17	1115	1117	1124	N22	W72	.963		12.1	9	SF		C		20		E
RAMY	17	1845		1900	N13	E79	.984		23.7	21	SF	4	C				DE
HTPR	18	0713	0724	0800	N23	W85	.998		11.9	47	SF		C	0724	40		D
HTPR	18	1515	1518	1541D	N23	W90	1.000		11.9	26D	SN		C	1518	20		E
RAMY	18	1730	1736U	1742	N13	E55	.836		22.9	12	SF	4	C		79		
HTPR	19	0952	1003	1046	N13	E50	.787		23.2	48	SF		C	1003	40	.6	E
RAMY	19	1500	1522	1534	N13	E49	.777		23.3	34	SN	4	C		141		F R
MCMA	19	1502	1516	1540	N12	E48	.763	14528	23.2	38	SN		C	1516	40	.6	EH
HTPR	19	1510	1515	1527	N13	E50	.787		23.4	17	SN		C	1515	80	1.2	E,K
RAMY	19	1515E	1524U	1535D	N12	E59	.869		24.1	20D	SN	4	V		159		F R
RAMY	19	1603	1607	1611D	N12	E49	.774		23.3	8D	SN	4	C		88		DE
MCMA	19	1603	1605	1617	N13	E46	.736	14528	23.1	14	SN		C	1605	50	.7	EH
RAMY	20	1230E	1240	1248D	N12	E36	.622		23.2	18D	SN	4	C		95		F R
RAMY	20	1235E	1241U	1248D	N13	E33	.589		23.0	13D	SN	4	V		95		F R
RAMY	20	1250E	1256	1258D	N13	E41	.687		23.6	8D	SF	4	C		47		R
RAMY	20	1250E	1254	1258D	N14	E41	.691		23.6	8D	SF	4	V		47		R

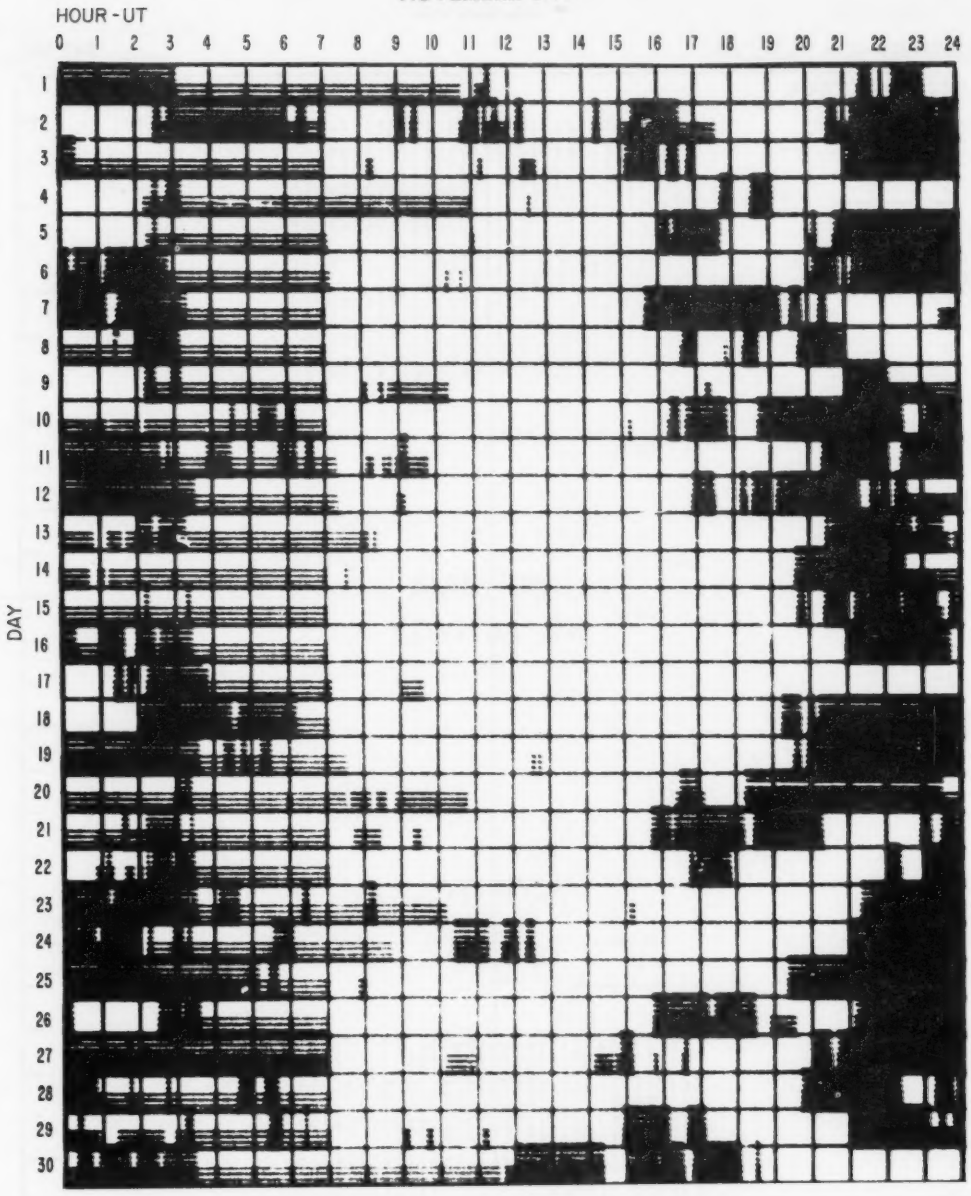
"Remarks":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by a high speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the calcium II lines H and K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in Hα line suggests ejection of high velocity material.
S = Brightness follows disappearance of filament (same position).
T = Region active all day.
U = Two bright branches, parallel (||) or converging (Y).
V = Occurrence of an explosive phase: important and abrupt expansion in about a minute with or without important intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

NOVEMBER 1976



Observatories included in total patrol:

Athenes	Haute Provence	Manila	Ramey
Bucharest	Herstmonceux	McMath-Hulbert	Tehran
Catania	Istanboul	Palehua	Wendelstein

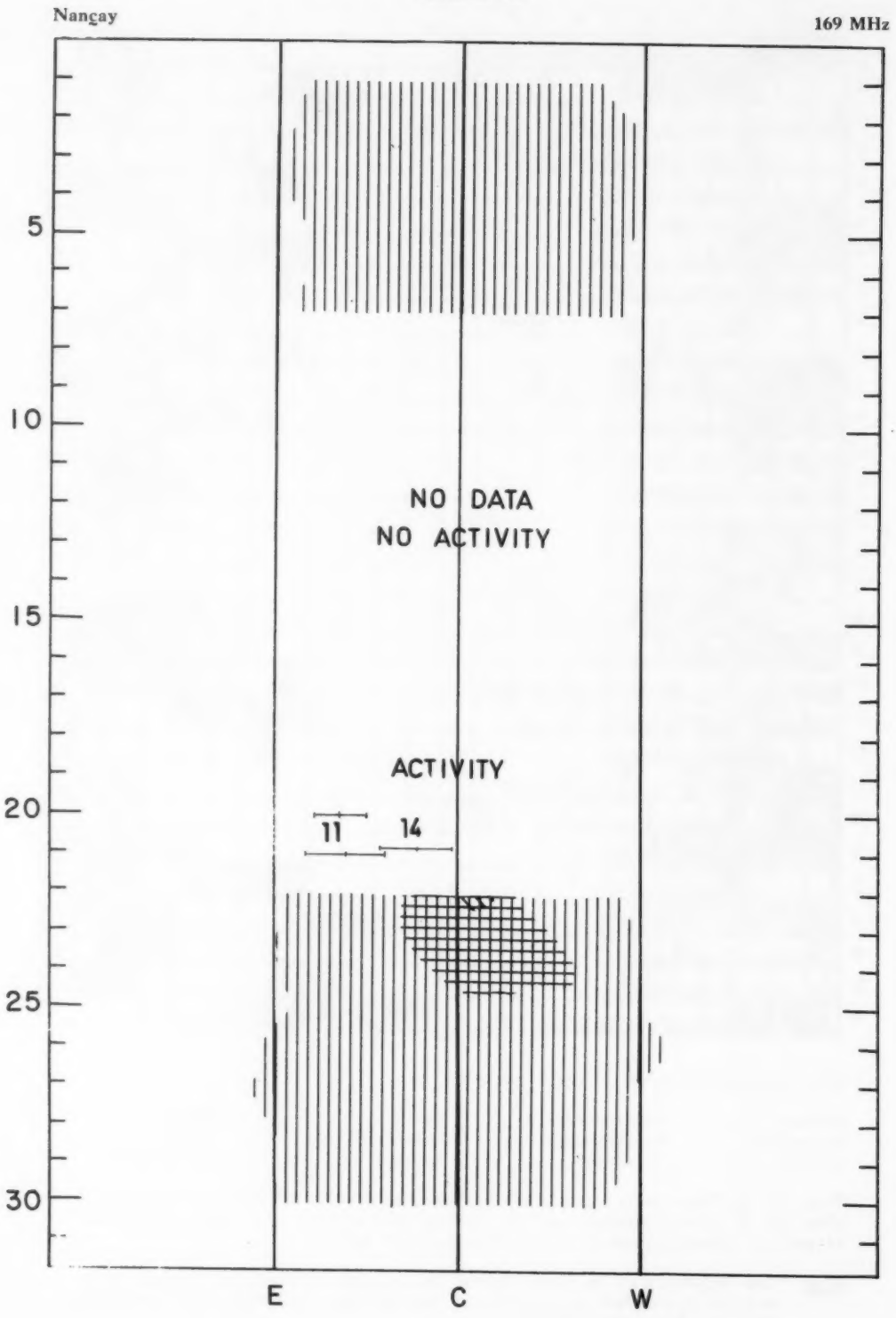
Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

Note: The Intervals of No Flare Patrol Observation graphed for October 1976 and published last month did not include the observing times for Athenes, Palehua, Ramey and Tehran.

12
Nov 76

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

NOVEMBER 1976

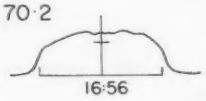


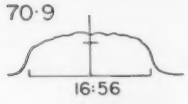
EAST-WEST SOLAR SCANS
NOVEMBER 1976

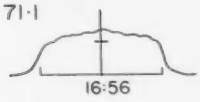
ALGONQUIN RADIO OBSERVATORY
CANADA

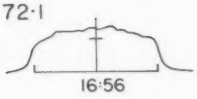
10·7cm
Fan Beam with 1·5 minutes of arc
E-W Resolution

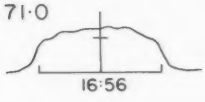
01
72·0
NO DATA

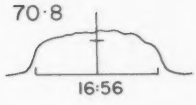


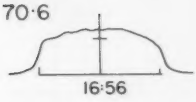


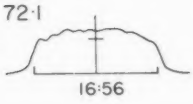


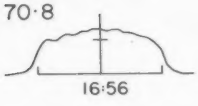


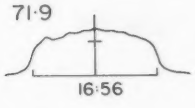


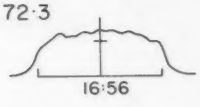


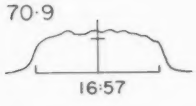


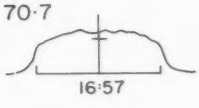


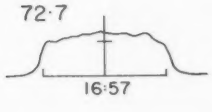


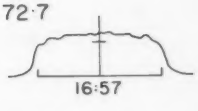


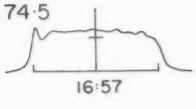


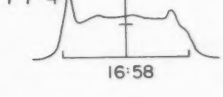


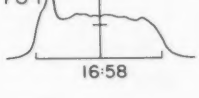












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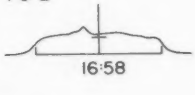
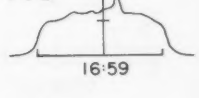
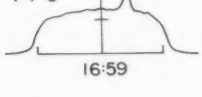
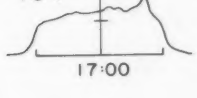
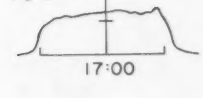
74·7
NO DATA

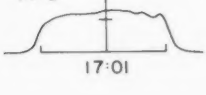


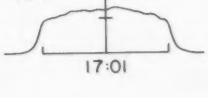


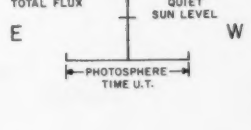












14
Nov 76

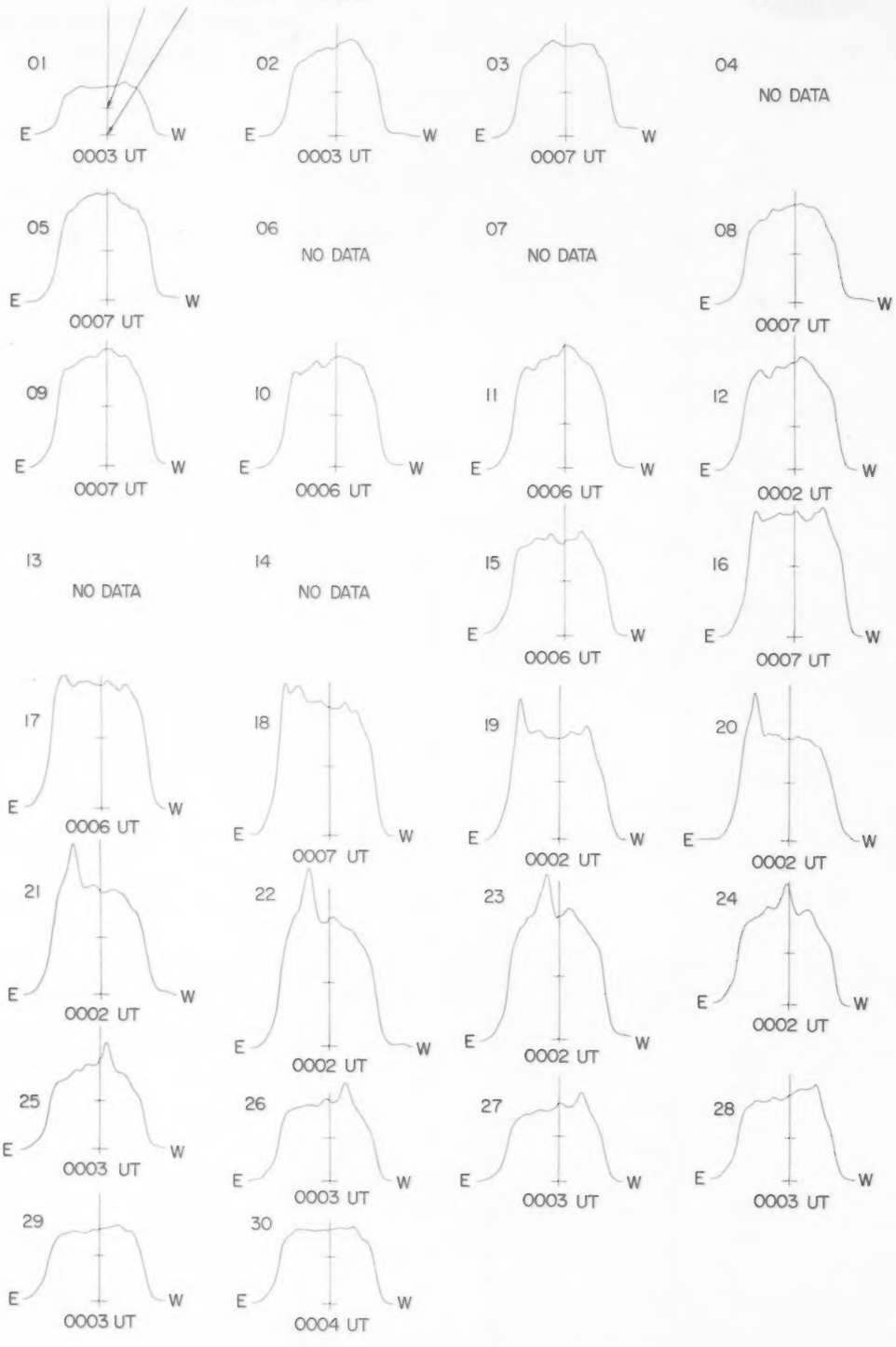
EAST-WEST SOLAR SCANS

NOVEMBER 1976

Fleurs, Australia

ESTIMATED QUIET SUN LEVEL
COLD SKY LEVEL

21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution



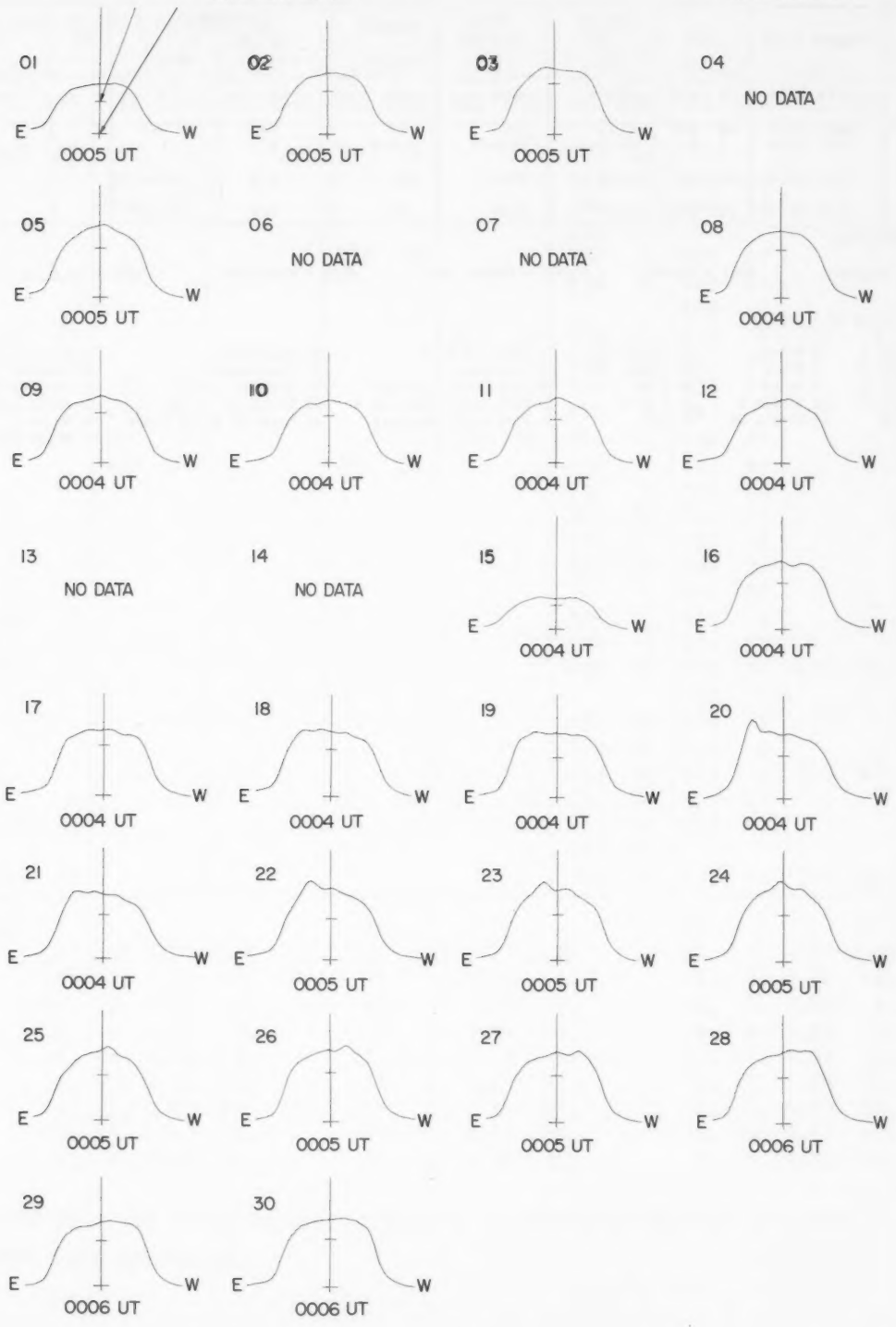
EAST-WEST SOLAR SCANS

NOVEMBER 1976

Fleurs, Australia

ESTIMATED QUIET SUN LEVEL
COLD SKY LEVEL

43 cm
Fan-Beam with 4 minutes of arc
E-W Resolution



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

NOVEMBER 1976

	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
17	2800	OTTA	32 ABS	2037	2046	63	-2.2	-1.1		
18	2695	PENT	20 GRF	2116	2127	35	1.4	0.7		
	2695	PENT	1 S	2235.5	2236.2	1.5	2	1		
19	2800	OTTA	22 GRF	1302	1518	260	4.8	2.4		
20	2695	PENT	20 GRF	2128	2132	12	1.2	0.6		

Observatories:

BOUL = Boulder MANI = Manila OTTA = Ottawa ARO PENT = Penticton SGMR = Sagamore Hill

Explanation of Type Code:

1 Simple 1	6 Minor	22 Simple 3F	27 Rise and Fall	32 Absorption	44 Noise Storm in Progress
2 Simple 1F	7 Minor +	23 Simple 3AF	28 Precursor	40 Fluctuation	45 Complex
3 Simple 2	8 Spike	24 Rise	29 Post Burst Increase	41 Group of Bursts	46 Complex F
4 Simple 2F	20 Simple 3	25 Rise A	30 Post Burst Increase A	42 Series of Bursts	47 Great Burst
5 Simple	21 Simple 3A	26 Fall	31 Post Burst Decrease	43 Onset of Noise Storm	48 Major
					49 Major +

SOLAR WIND

Interplanetary Scintillations

NOVEMBER 1976

UCSD 74 MHZ SCINTILLATIØNS

DAY	3C48		3C144		3C147		3C161		3C237		3C273		3C298		3C459	
	VEL	ERR	VEL	ERR	VEL	ERR	VEL	ERR	VEL	ERR	VEL	ERR	VEL	ERR	VEL	ERR
1	363	17	462	30			371	72			321	28				
2			389	43							161	45	690	-96		
3			298	29							294	6	556	26		
5											238	11				
6							456	16			257	6	505	67		
7											236	0	544	64		
8													608	2		
9	380	21							387	16	326	26	616	0	301	2
10	388	66									435	88	605	35		
11			472	49							374	3	638	54		
12	442	*	447	50							352	4	597	1		
13	502	50	286	7					404	58	456	1	686	34		
14			421	34			303	38			449	1	687	49		
15											432	8	590	23		
16											367	32	712	41		
17											451	37	780	6		
18											326	14	604	25		
19													425	20		
20	344	7									385	9	568	8		
21											411	1	454	13		
22	379	6									400	32	470	24	474	29
23													433	1		
24											405	15	374	13		
25											398	18	387	0		
26											401	38	341	6	336	47
27	397	6					559	18	315	51	357	24	450	21		
28	415	0									361	64	443	43		
29											297	60				
30	297	51									356	14	419	44	349	40

NØVEMBER 5					15				25			
	UT	LAT	DIST	DLØN	UT	LAT	DIST	DLØN	UT	LAT	DIST	DLØN
3C48	7.	8.	1.28	-1.	6.	7.	1.27	-4.	6.	7.	1.26	-6.
3C144	11.	2.	1.25	9.	10.	1.	1.27	7.	10.	0.	1.29	4.
3C147	10.	9.	1.22	9.	9.	7.	1.24	7.	9.	6.	1.26	5.
3C161	12.	-4.	1.18	9.	12.	-5.	1.21	8.	11.	-6.	1.24	6.
3C237	16.	0.	0.96	17.	15.	0.	1.01	17.	14.	-1.	1.06	16.
3C273	18.	3.	0.62	51.	17.	1.	0.75	41.	16.	0.	0.85	31.
3C298	20.	45.	0.40	59.	19.	30.	0.51	56.	18.	19.	0.62	49.
3C459	4.	6.	1.20	-11.	4.	6.	1.17	-13.	3.	5.	1.13	-14.

* Indicate data for which no error estimate is available because only two antennas were operating.

PIONEER VI

NOVEMBER 1976

Date Nov. 1976	DSN Coverage (UT)	Data Time (UT)	ESP (°)	SOLAR WIND AMES[1] U_{H^+} (km/sec)†	AMES[1] TAU (days)	MIT U_{H^+} (km/sec)	MIT N_{H^+} (H^+/cc)	COSMIC RAY PROTONS[2] (particles/sec) 6-13 (Mev*)	13-175 (Mev**)	>175 (Mev)
2	0005-0359	0000	028.7	339.	2.5	349.	13.1	0.46	0.113	1.28
		0100		339.		349.	13.	.54	.132	1.31
		0200		339.		347.	12.8	.49	.157	1.2
		0300		339.		344.	12.9	.49	.157	1.33
		0400		339.		346.	12.6	.47	.129	1.39
3	0001-0359	0000		339.	2.5	349.	30.2	.59	.148	1.28
		0100		339.		352.	22.2	.53	.135	1.37
		0200		339.		352.	24.3	.6	.15	1.35
		0300		339.		350.	24.2	.54	.164	1.25
		0400		339.		347.	20.7	.74	.158	1.41

[1] Wolfe - NASA/ARC
[2] Simpson - University of Chicago

* Includes He 0.6-13 Mev/nucleons and electrons ∿0.5 Mev - see J. Retzler and J. A. Simpson, J. Geophys. Res., 74, 9, 2149-2160, 1969 for discussion of the electron response of Pioneer VII.

** Includes He >13 Mev/nucleons.
Q Used to indicate that a rate is at its quiescent level.

ESP = Earth-Sun Probe Angle.

† Peak velocity

Note: Data sampled hourly unless otherwise noted.

Note: This coverage was obtained as a result of PN-6 alignment with Helios.

SOLAR X-RAYS BY SATELLITE
SMS GOES

NOVEMBER 1976

.5 - 4Å Hourly Averages (10^{-5} watts/m^2)

MO DA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean
11/ 1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	M	B	B	B	B	B
11/ 2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	M	M	B
11/ 3	M	M	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/ 4	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	M	M	B	B	B
11/ 5	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/ 6	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/ 7	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/ 8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/ 9	B	B	B	B	M	M	B	B	B	B	B	B	B	B	M	B	B	B	M	B	B	M	M	B	B
11/10	B	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/11	B	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/12	B	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	M	B	B	M	B	B	B	B
11/13	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	0.01	B	B	B	B	B	B	B	B
11/14	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/15	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/16	B	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/17	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	M	M	M	M	M	M	M	M	B	B
11/18	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/19	B	B	B	B	M	M	B	B	B	B	B	B	0.02	B	B	B	B	B	B	B	B	M	M	B	B
11/20	B	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/22	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	0.06	0.03	B	B	0.02	B	B	B	B	B
11/23	B	B	B	B	B	B	B	B	B	B	B	B	0.07	0.21	0.01	B	B	B	B	B	M	B	B	B	0.01
11/24	B	B	B	B	B	B	B	B	B	B	B	B	B	0.02	0.01	B	B	B	B	B	B	B	B	B	B
11/25	B	B	0.03	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	0.02	B	0.08	B	B	B	B
11/26	0.06	0.02	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	M	B	B	B	B	B	B	B
11/27	B	B	B	B	B	B	0.01	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/28	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/29	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/30	B	B	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	M	B	B	B

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.

SOLAR X-RAYS BY SATELLITE
SMS GOES
NOVEMBER 1976

1 - 8Å Hourly Averages (10^{-4} watts/m^2)

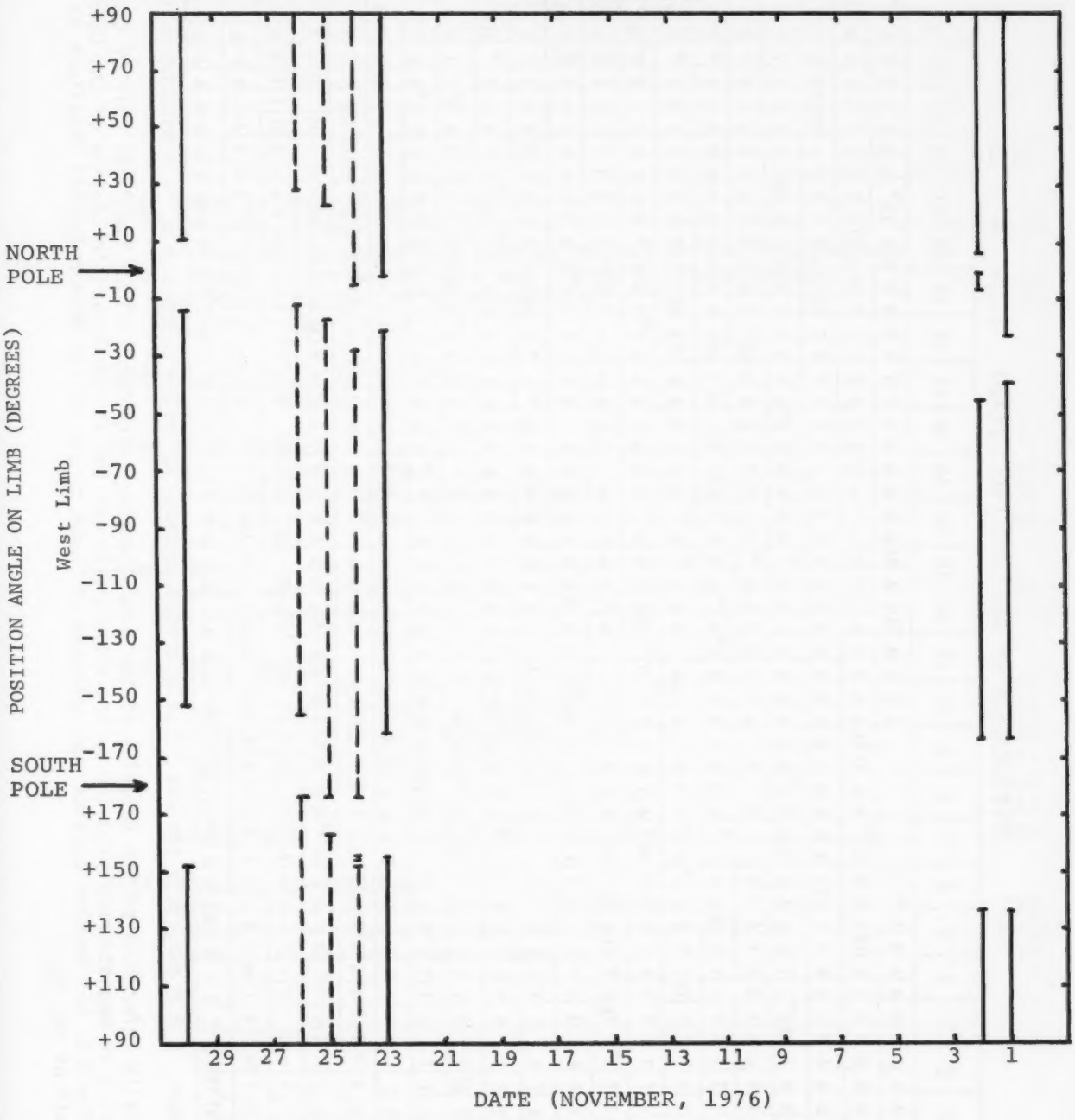
MO DA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean
11/ 1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	M	0.03	B	B	B	B
11/ 2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	M	M	B
11/ 3	M	M	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/ 4	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	M	M	B	B	B
11/ 5	B	B	B	B	M	B	B	B	B	0.02	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/ 6	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/ 7	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	0.02	B	B	B
11/ 8	B	B	0.03	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	0.10	B	B	B	B	B
11/ 9	B	B	B	B	M	M	B	B	B	B	B	B	B	B	M	B	B	B	M	B	B	M	M	B	B
11/10	B	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/11	B	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/12	B	B	B	B	M	M	B	B	B	0.02	B	B	B	B	B	B	B	M	B	B	M	B	B	B	B
11/13	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	0.01	B	B	B	B	B	B	B	B	B
11/14	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/15	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/16	B	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/17	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	M	M	M	M	M	M	M	M	B	B
11/18	B	B	B	B	B	0.03	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/19	B	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	M	M	B	B
11/20	B	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/22	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	0.04	0.02	B	B	0.02	B	B	B	B	B
11/23	B	B	B	B	B	B	B	B	B	B	B	0.07	0.26	0.43	0.08	B	B	B	B	B	M	B	B	B	0.03
11/24	B	B	B	B	B	B	B	B	B	B	B	B	0.02	0.04	0.02	B	B	B	B	B	B	B	B	B	B
11/25	0.01	0.04	0.12	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	0.01	0.01	0.24	B	B	0.05	0.01
11/26	0.34	0.11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	M	B	B	B	B	B	B	0.01
11/27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/28	B	B	B	M	M	0.02	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/29	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/30	B	B	B	B	B	M	M	B	B	B	B	B	B	B	0.01	B	0.01	B	B	B	B	M	B	B	B

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.

CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

NOVEMBER 1976



INFERRED IP MAGNETIC FIELD

BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1940	JUN 11	A A A A A A A A A A	* - - - - - - A A A A	TA A A AT	A A A A A A T T T T T T	A A TA* A A T T T T T* T T* T T
1941	JUL 8	A A A A A A A A TA A A A	TA* A A TA TA A A T T A A A	A* - * A A* A T A A T T T TA	A AT T T T T T T T T AT AT A A A A
1942	AUG 4	A A A A A T A A T T AT T A	A A A A A A A A A A A A A	A T T T - A T T * . T T TA	T T T T T T - AT AT T T T T A A A A
1943	AUG 31	A A A A TA A* T T A A A A TA	A T T* A A A A A A A A A	* A A A A* A A* A T T T T T	T - T TA T T T T T T T T A T A A
1944	SEP 27	A A T A A A A A T T T A T	- A - A - A A* A A A A A	* AT A T T A A A A AT * T A	T T T A T T T T T T T TA A A -
1945	OCT 24	T T T T T T T T T TA A A A	* A A A A A A A A A* A	* A A A * AT - AT - AT T AT	T T T T T T T T T T T A T *	T T T T T T
1946	NOV 20	A T A * T T TA T T A A T* A	T* A A A - A - A - A A A	* A * A A A A A A AT A AT	T T T T T T T T T T T *	T T T T T T
1947	DEC 17	T - T T T T T T T T T T TA	* A T A T A * AT * TA A A A	A * A A A A A T T* T A T *	T T T T T T T A* TA * T *	T T T T T T
1948	1976 JAN 13	TA T T T* T TA T T TA A TA T AT	T A A A T A - A - A * A A A	- A - A A A - A - T T T T T	T T T T T T T T T T T TA T T T
1949	FEB 9	T A T A T T T - T - A T T	- TA A T A AT A* T T A TA A	A A A A A A T A A T T T T*	T A T T T T T T T * T A T TA TA*
1950	MAR 7	T A T A T T T T T T T T T	- T TA A A* A A TA A A A A	A A A A A A A * T * T AT T	T T T T T T T* T T T T T - TA T T T
1951	APR 3	T T T T T T T T T T T T T	* A A A A A A A * A A A A	A A A A A A A A A A A A A	A A AT A TA T* A T* T T T T T *	AT T TA A* T T
1952	APR 30	T T AT T T T T T T T T TA	A AT T* A A A - A A A A A	- A - A - T T A A A A* A TA	AT AT T T T T A A* T T A A T - T T
1953	MAY 27	T - T T T T T T T T T T *	TA T A A A A A A A T A T	A - T * A A A A A - T T T	A T T A T T A A T T* A A T A A A A A
1954	JUN 23	T T T T T T T T T T AT A	T T A A AT A A A TA T* AT	A A A A A A A TA A* A T T	A A A A A T T T A AT A* A TA AT AT T A A A T A*
1955	JUL 20	T A A T* T T A A A A A A A	A A A A A A TA A* T T A	A A A A T T A A A A T T A	A A A A T A AT T* TA TA TA - TA TA A A T T T T A A A A
1966	AUG 16	A A T T T T T T A A A A TA	T* A A A A A A A A A A A	A A A A A A A A A A A A *	A A AT A A A A A A A - AT - AT - AT - TA - A - A - A -
1967	SEP 12	A - T - AT - A - T - T - A	- A - A - A - AT - A - AT	- AT - T - T - T - A - A A	A A A AT A A A A - T A T A
1968	OCT 9	AT A T A* T A T A* T A T *	A A A A A A TA A T A* A	A A T A * A - T - T - * T	A T TA T AT A AT A A - A A A A AT A T A
1969	NOV 5	T AT TA T T T T T T TA A A	A T* A T A * AT * A A A -	A A A * T - T T T T T T T	T T A A A A A A A A A A A *

T = towards the sun A = away from the sun * = effect doubtful or not discernible - = missing data

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day.

OCTOBER 1976 DATA

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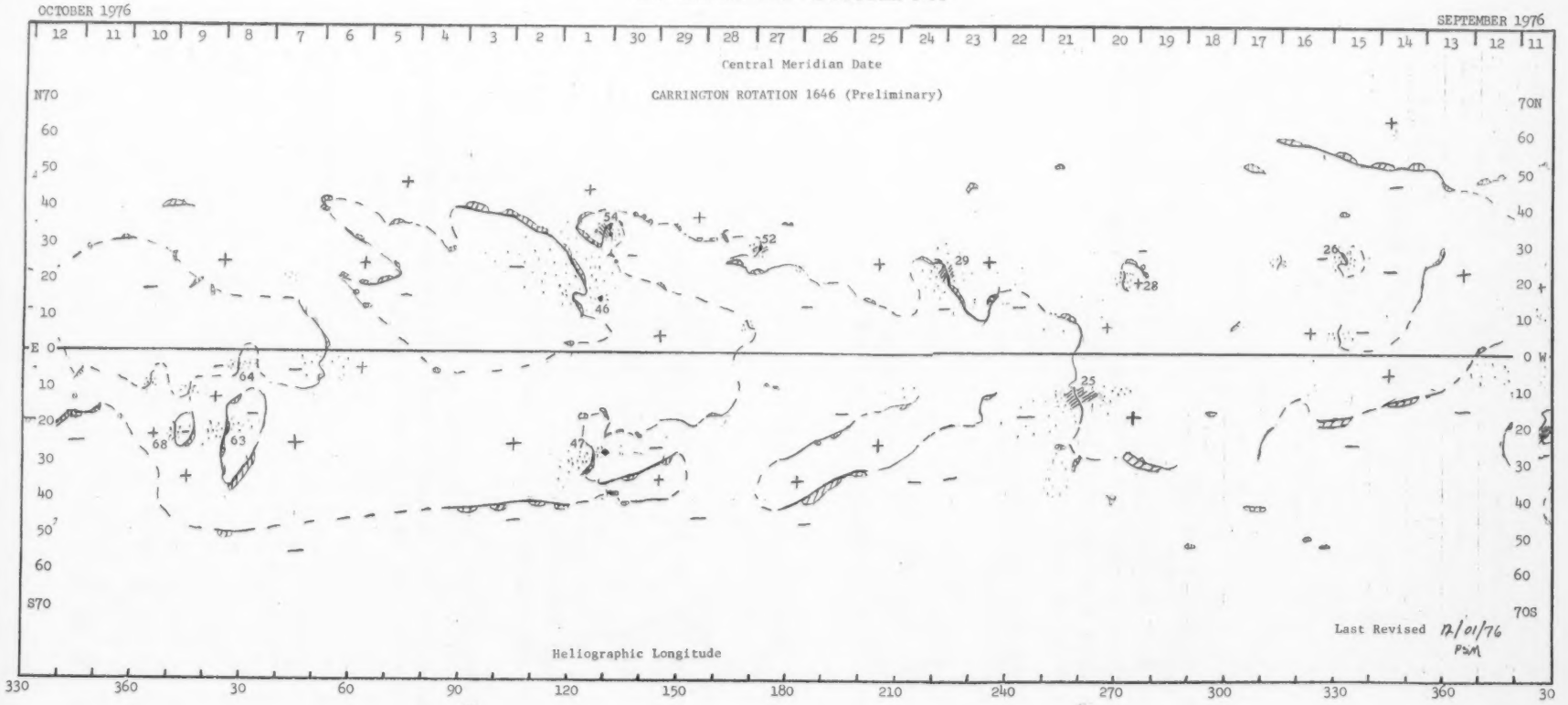
24
Oct 76

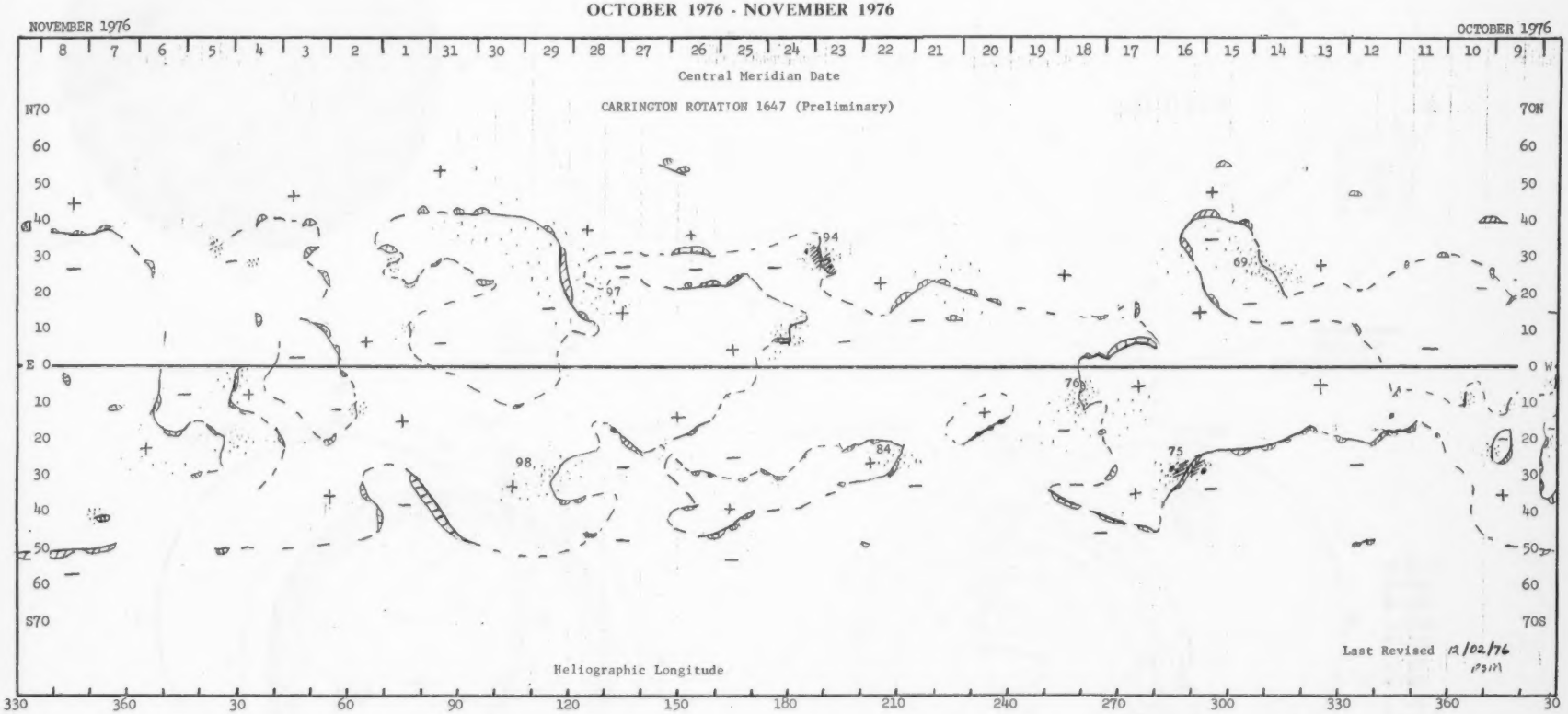
Hα SYNOPTIC CHART

SEPTEMBER 1976 - OCTOBER 1976



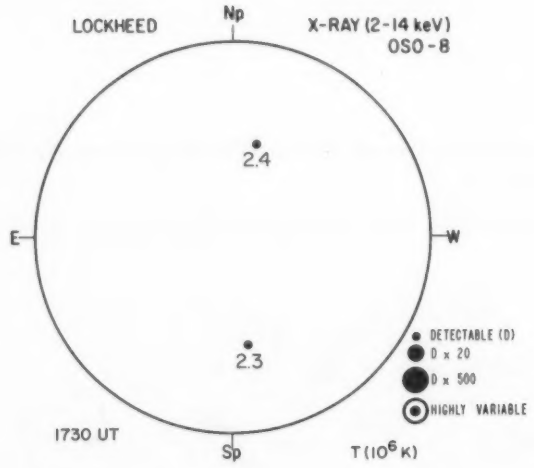
Hα SYNOPTIC CHART

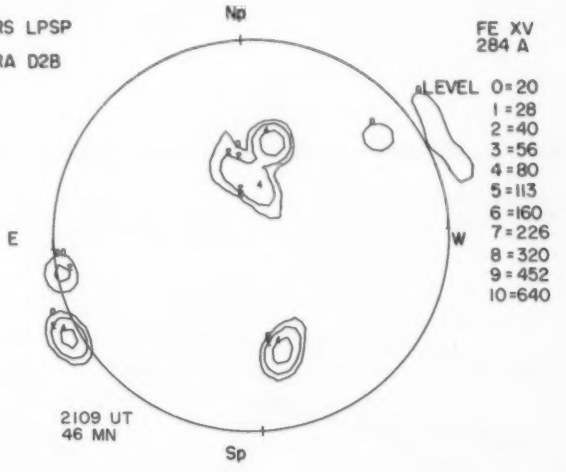
OCTOBER 1976 - NOVEMBER 1976

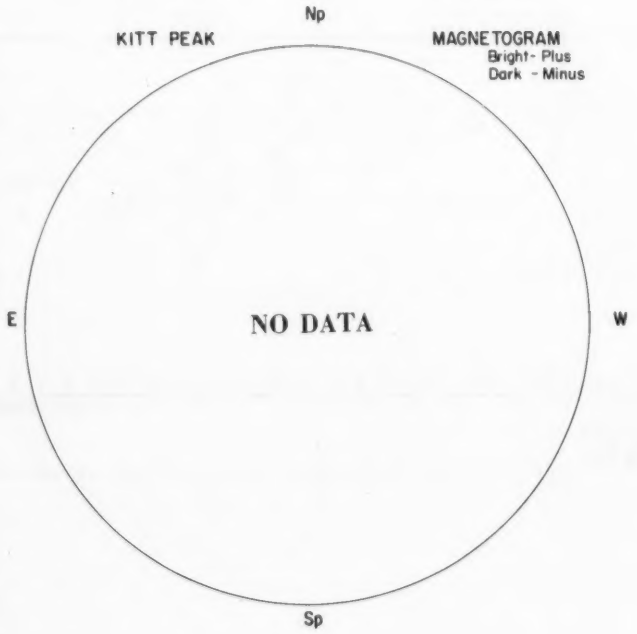


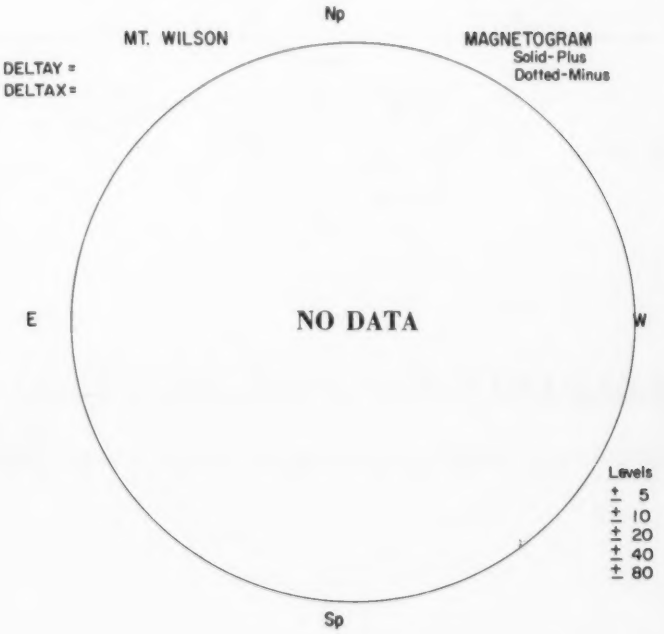
25 Oct 76

OCTOBER 1, 1976 (P = 26.03, B_o = 6.70, L_o = 130.67)



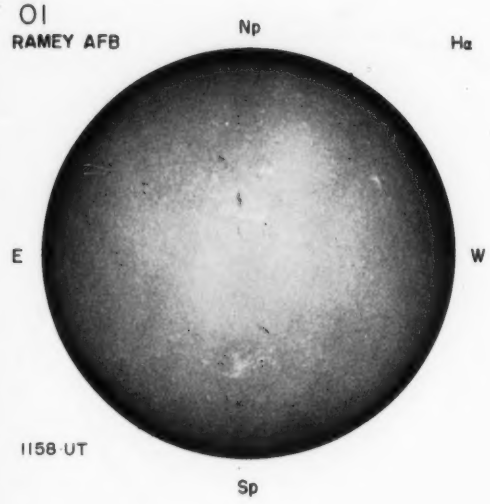






01

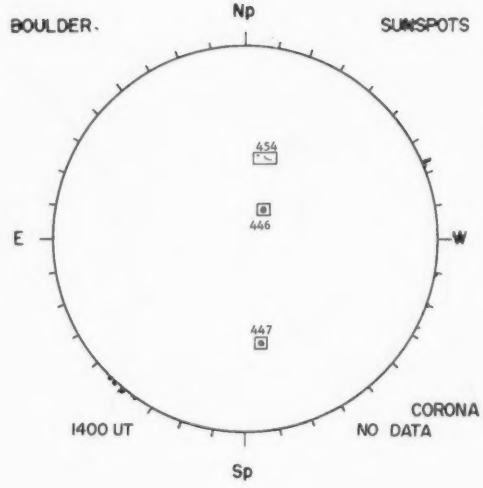
RAMEY AFB



Hα

1158 UT

BOULDER



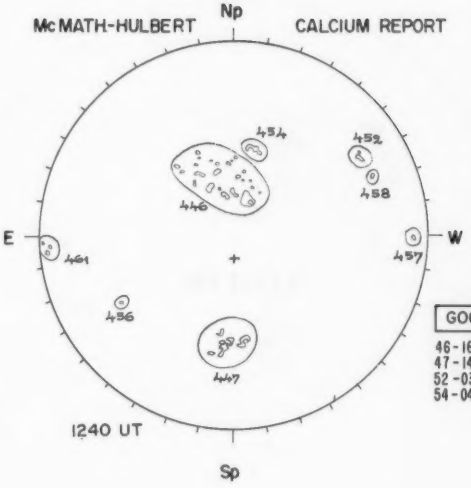
SUNSPOTS

1400 UT

CORONA

NO DATA

McMATH-HULBERT



CALCIUM REPORT

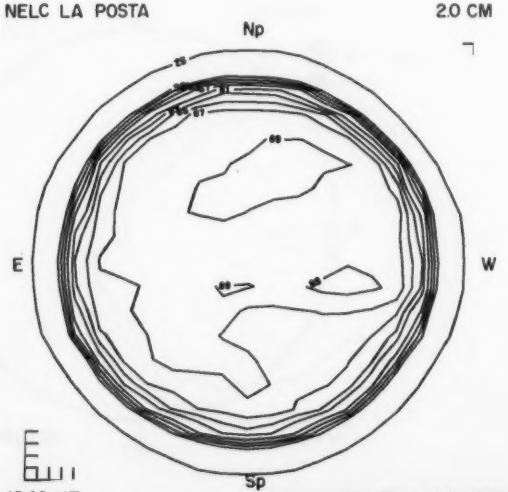
GOOD	S

46 - 1600 - 2.5
47 - 1400 - 3.0
52 - 0300 - 3.5
54 - 0400 - 3.5

1240 UT

NELC LA POSTA

2.0 CM

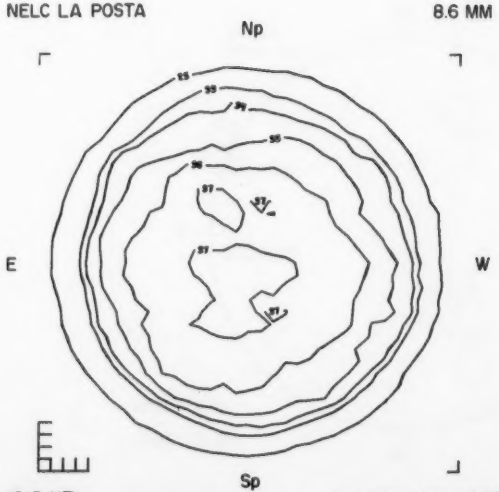


1940 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM

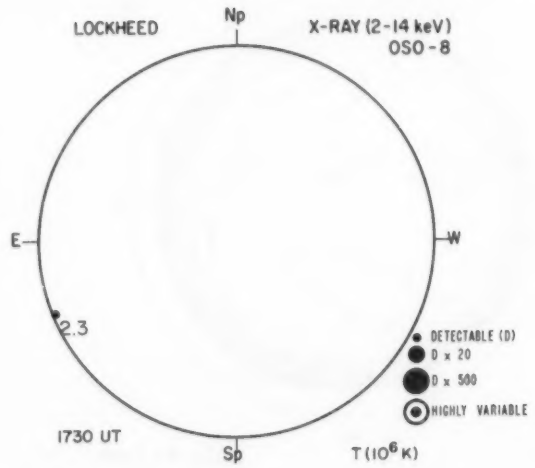


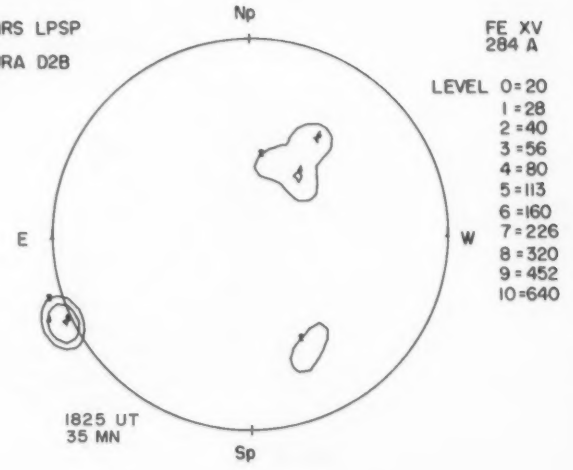
1815 UT

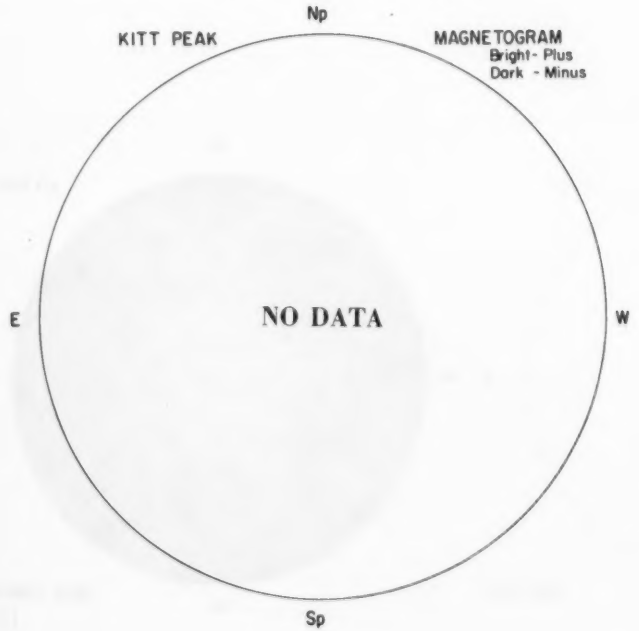
Ant. Temp. Unit 100°K

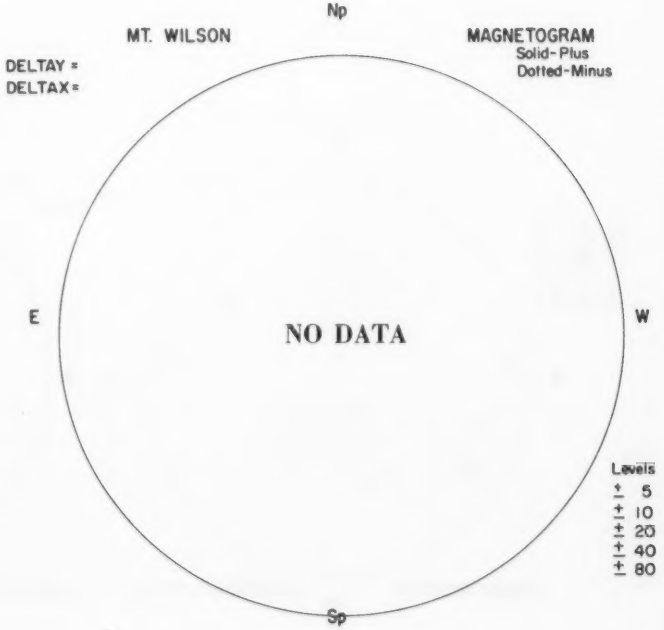
27 Oct 76

OCTOBER 2, 1976 (P = 26.09, B_0 = 6.65, L_0 = 117.48)



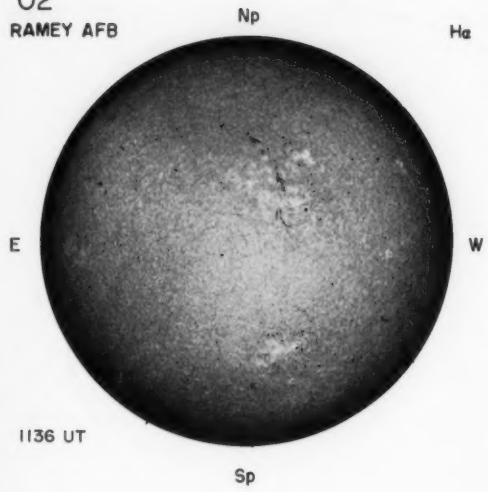






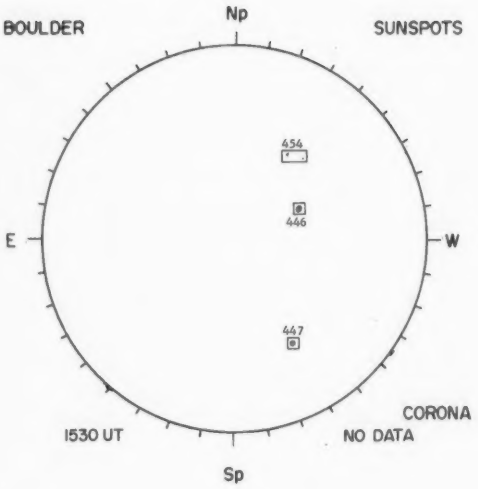
02

RAMEY AFB



1136 UT

Hα BOULDER



1530 UT

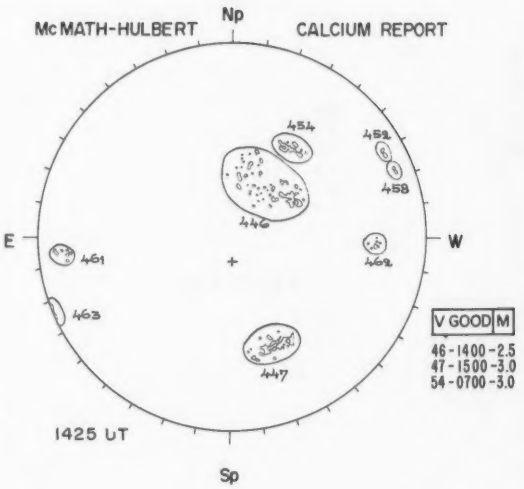
SUNSPOTS

CORONA

NO DATA

McMATH-HULBERT

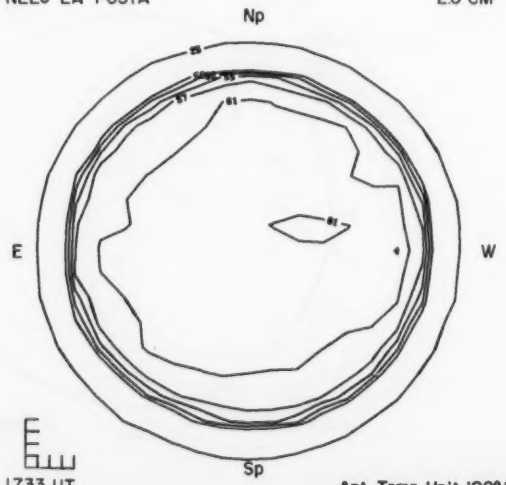
CALCIUM REPORT



V GOOD	M
46 - 1400 - 2.5	
47 - 1500 - 3.0	
54 - 0700 - 3.0	

1425 UT

NELC LA POSTA 2.0 CM



1733 UT

Ant. Temp. Unit 100°K

NELC LA POSTA 8.6 MM

NO DATA

WEATHER

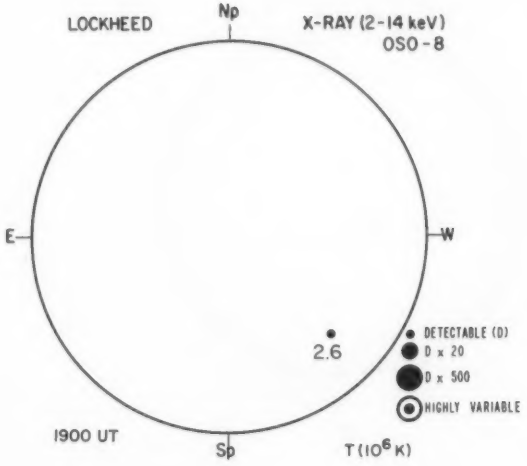
---- UT

Ant. Temp. Unit 100°K

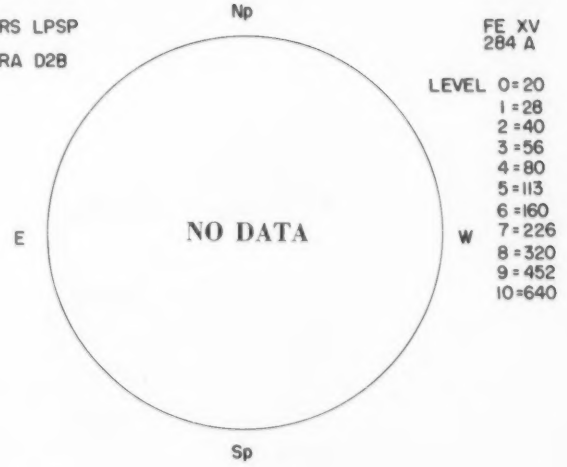
29 Oct 76

OCTOBER 3, 1976 (P = 26.14, B_o = 6.60, L_o = 104.28)

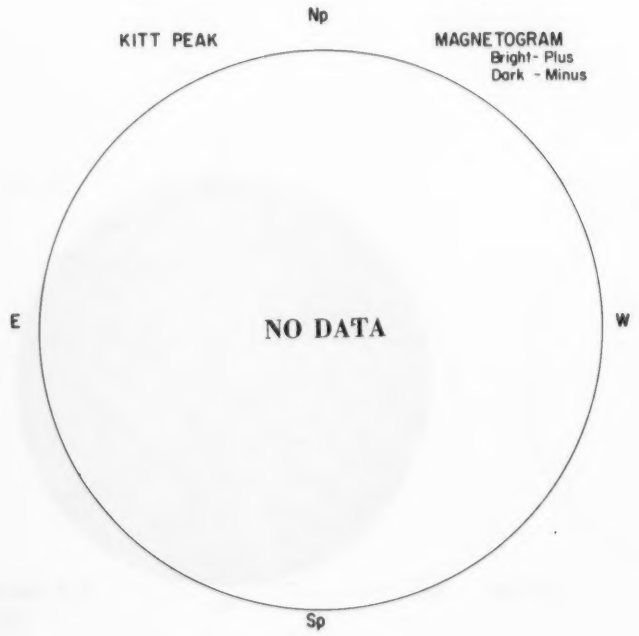
LOCKHEED



CNRS LPSP
AURA D2B

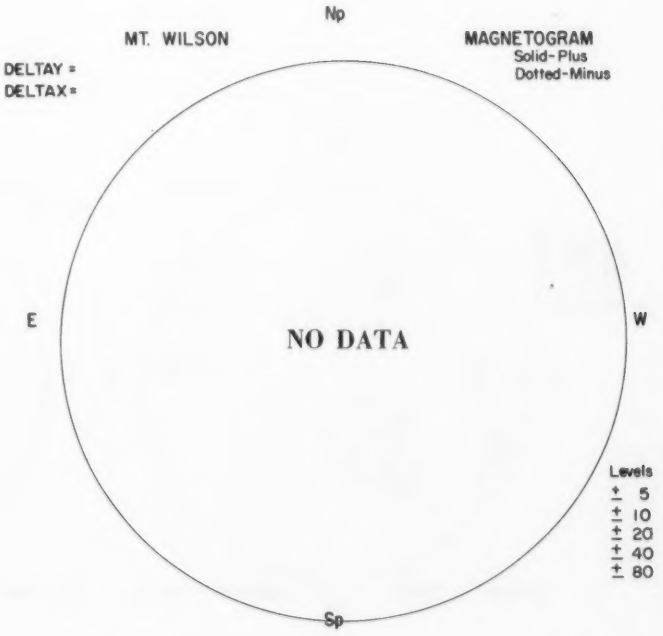


KITT PEAK



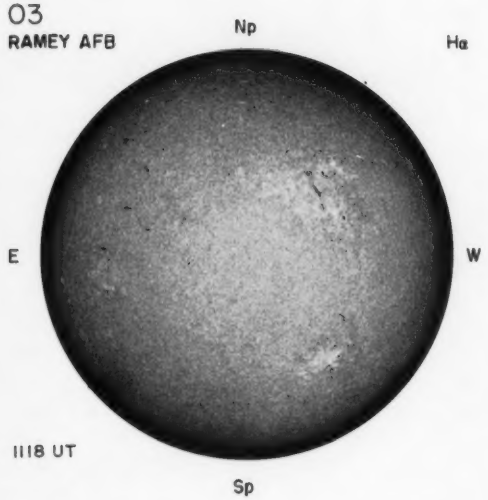
MT. WILSON

DELTAY =
DELTAX =



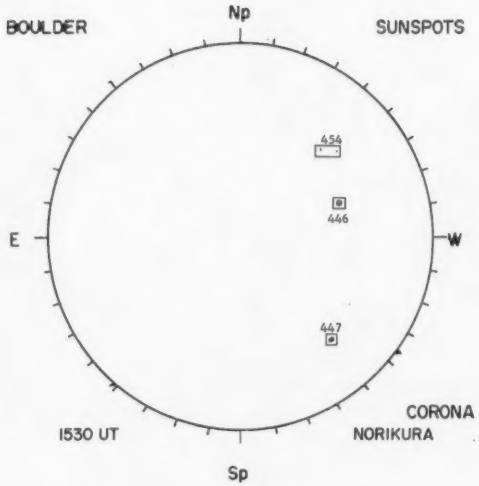
03

RAMEY AFB



1118 UT

Hα BOULDER



1530 UT

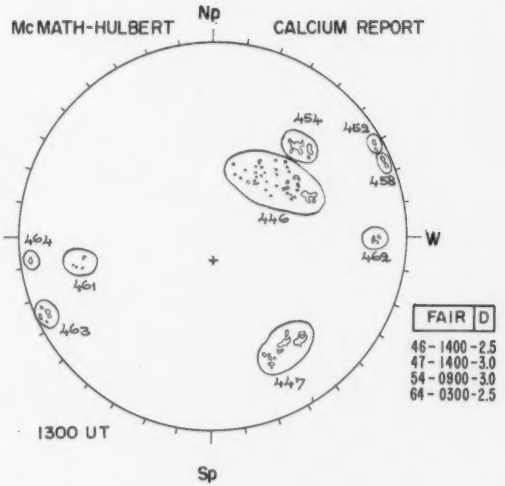
SUNSPOTS

CORONA

NORIKURA

McMATH-HULBERT

CALCIUM REPORT



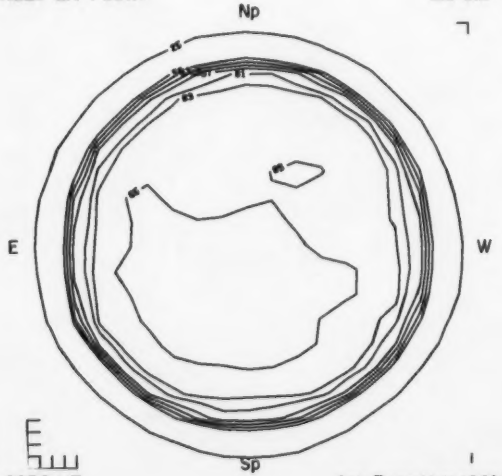
1300 UT

FAIR D

46 - 1400 - 2.5
47 - 1400 - 3.0
54 - 0900 - 3.0
64 - 0300 - 2.5

NELC LA POSTA

2.0 CM

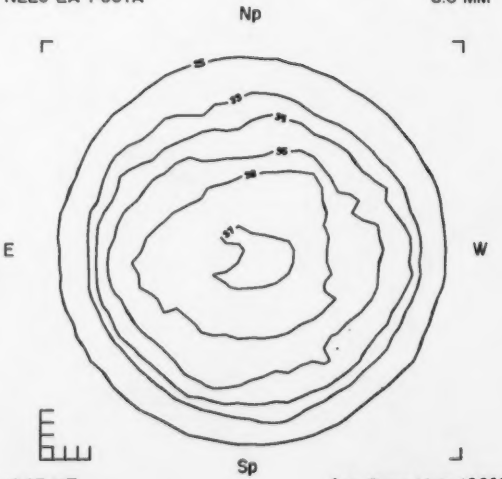


2036 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM

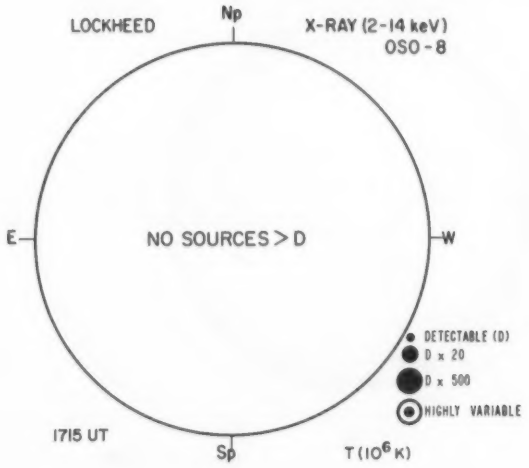


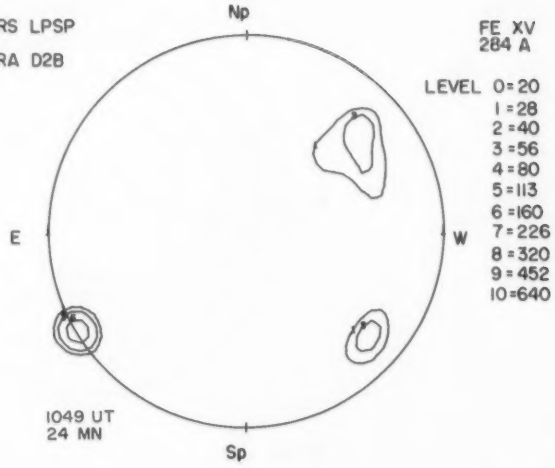
1847 UT

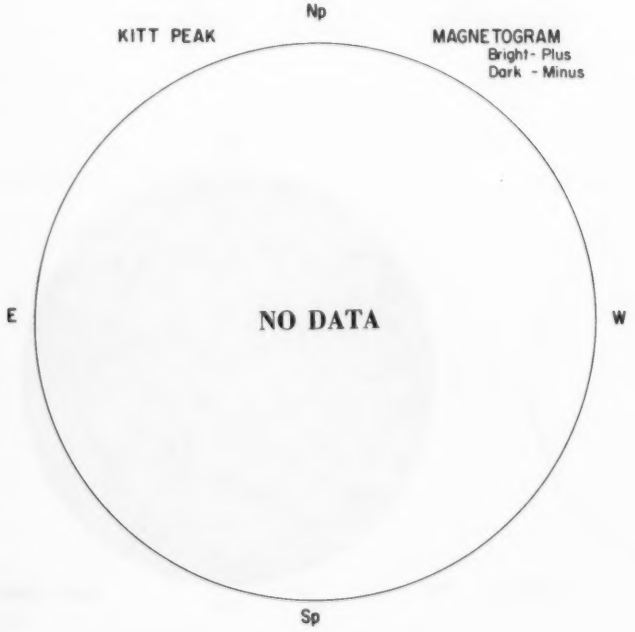
Ant. Temp. Unit 100°K

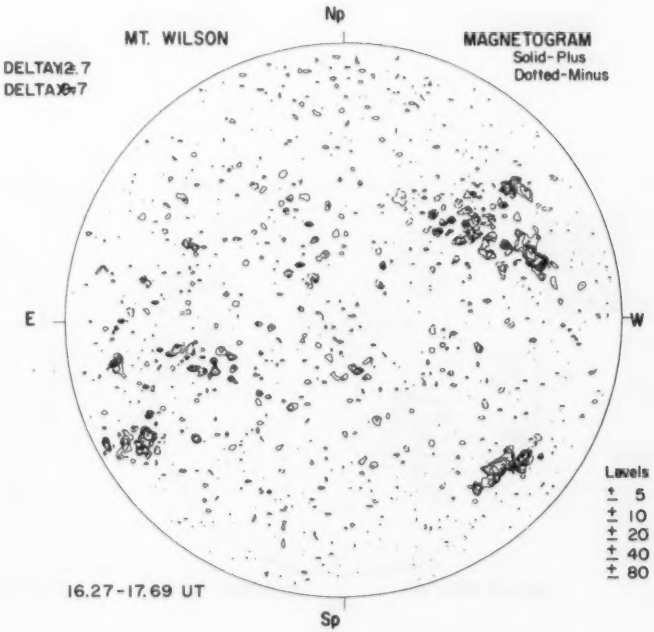
31
Oct 76

OCTOBER 4, 1976 (P = 26.19, B_o = 6.54, L_o = 91.09)



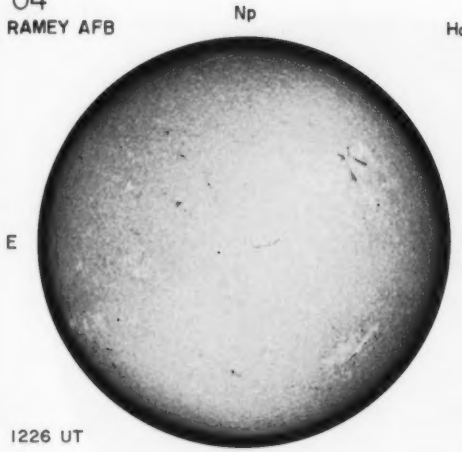






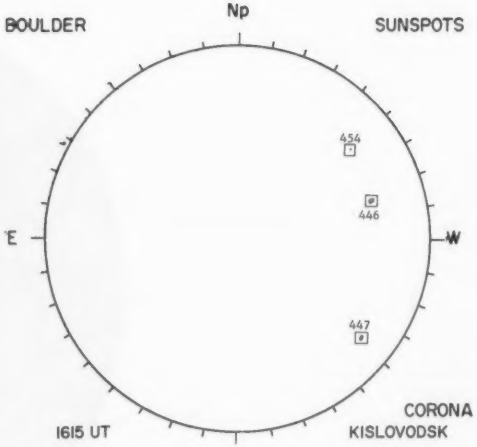
04

RAMEY AFB



1226 UT

Hα BOULDER



1615 UT

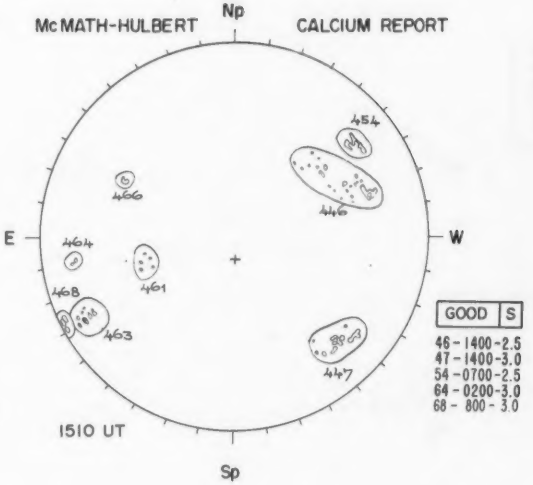
SUNSPOTS

CORONA

KISLOVODSK

McMATH-HULBERT

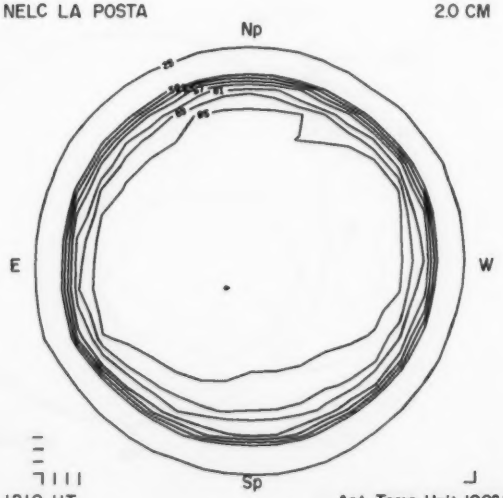
CALCIUM REPORT



1510 UT

GOOD	S
46 - 1400 - 2.5	
47 - 1400 - 3.0	
54 - 0700 - 2.5	
64 - 0200 - 3.0	
68 - 800 - 3.0	

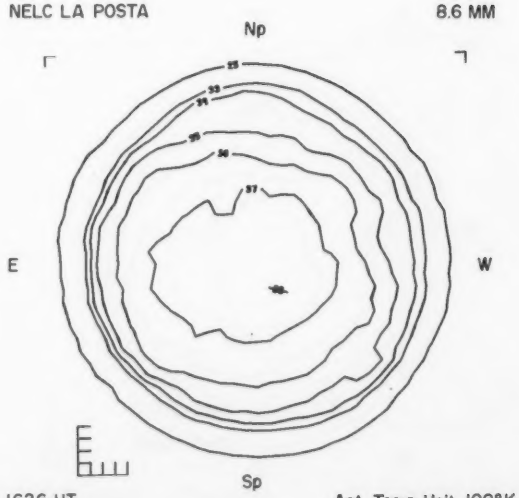
NELC LA POSTA 2.0 CM



1810 UT

Ant. Temp. Unit 100°K

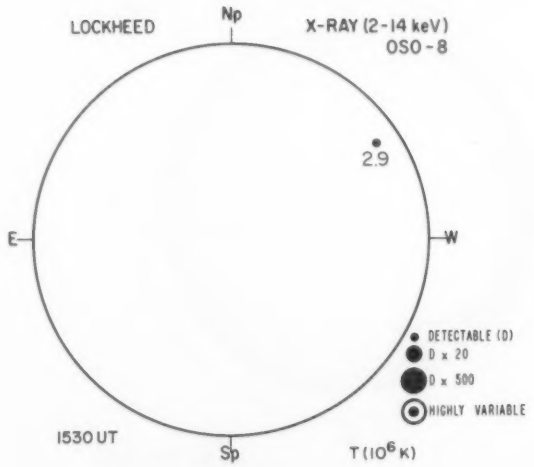
NELC LA POSTA 8.6 MM

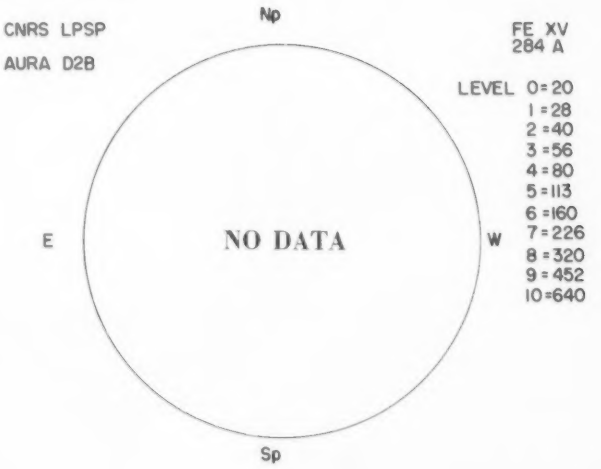


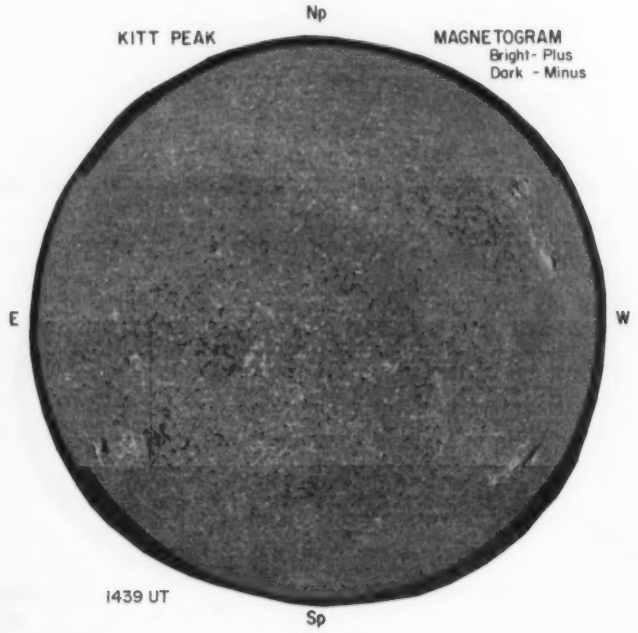
1626 UT

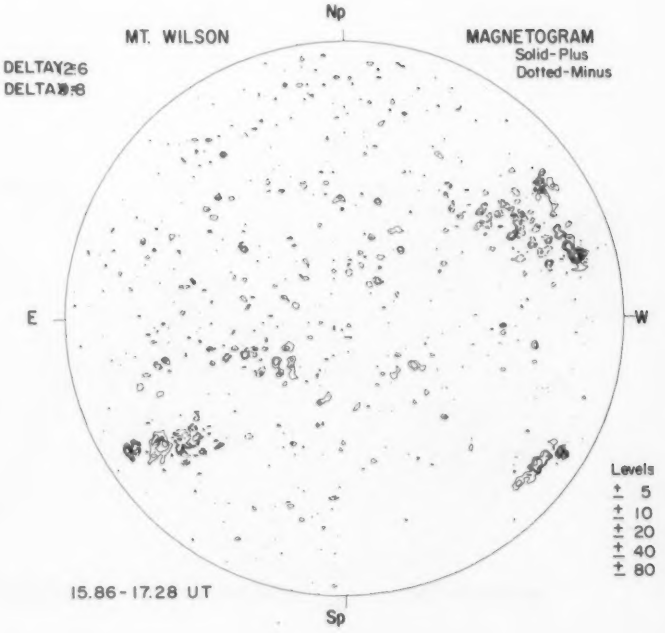
Ant. Temp. Unit 100°K

OCTOBER 5, 1976 (P = 26.23, B_o = 6.49, L_o = 77.89)



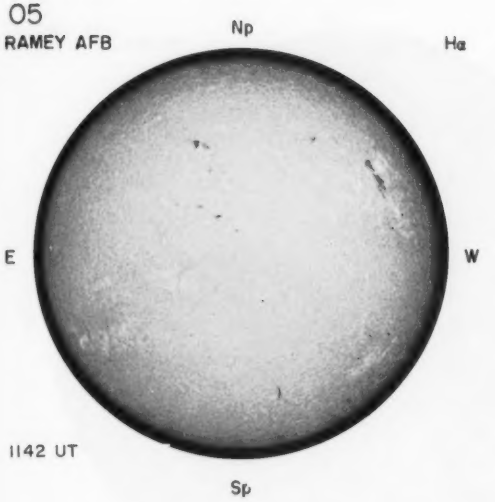






05

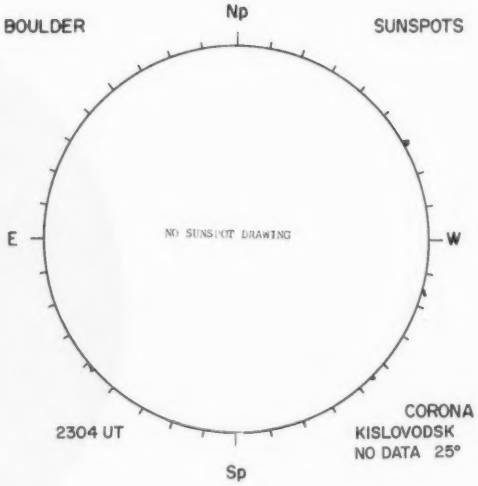
RAMEY AFB



1142 UT

Hα

BOULDER

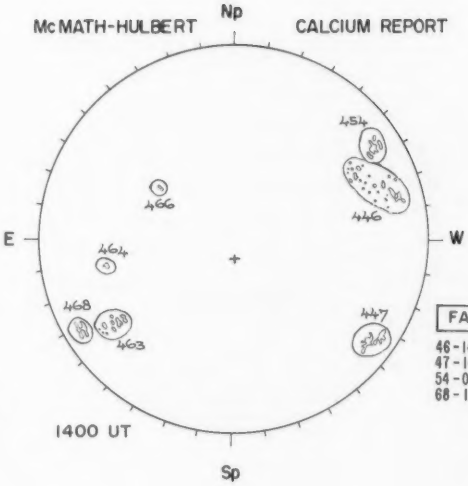


2304 UT

SUNSPOTS

CORONA
KISLOVODSK
NO DATA 25°

McMATH-HULBERT



1400 UT

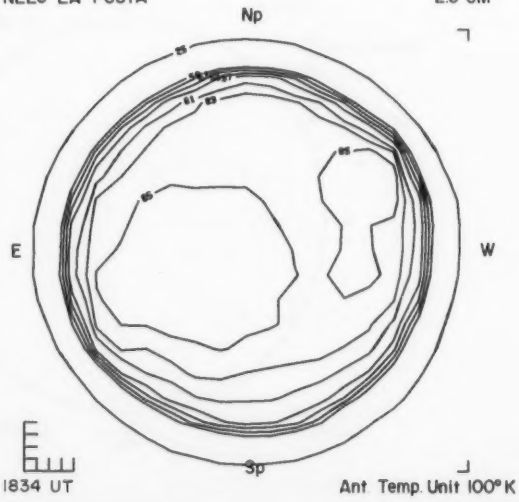
CALCIUM REPORT

FAIR	M

46 - 1400 - 2.5
47 - 1400 - 2.5
54 - 0700 - 3.0
68 - 1100 - 3.0

NELC LA POSTA

2.0 CM

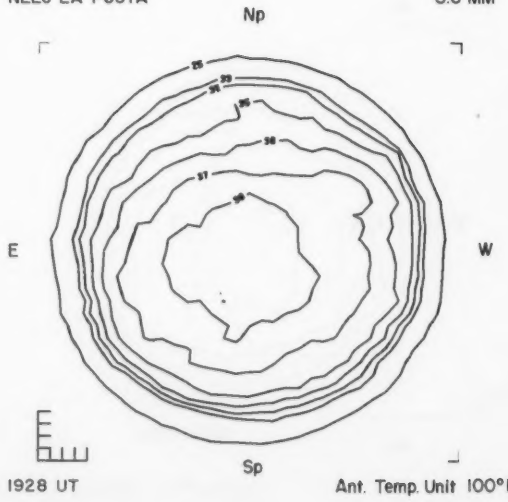


1834 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

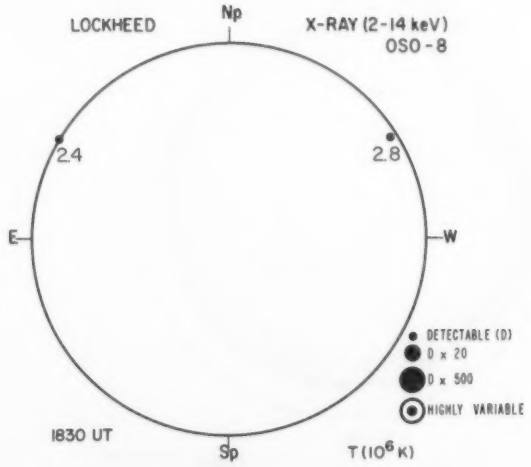
8.6 MM

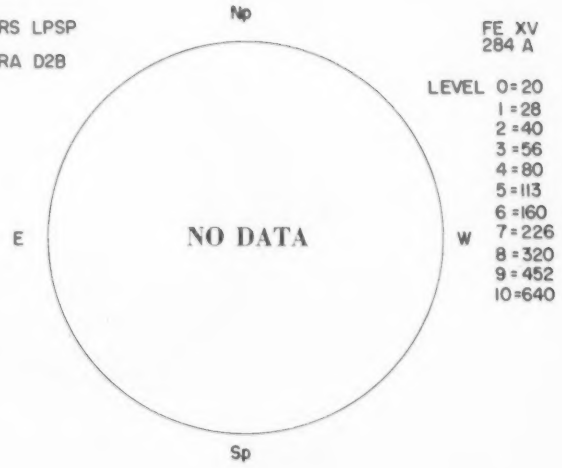


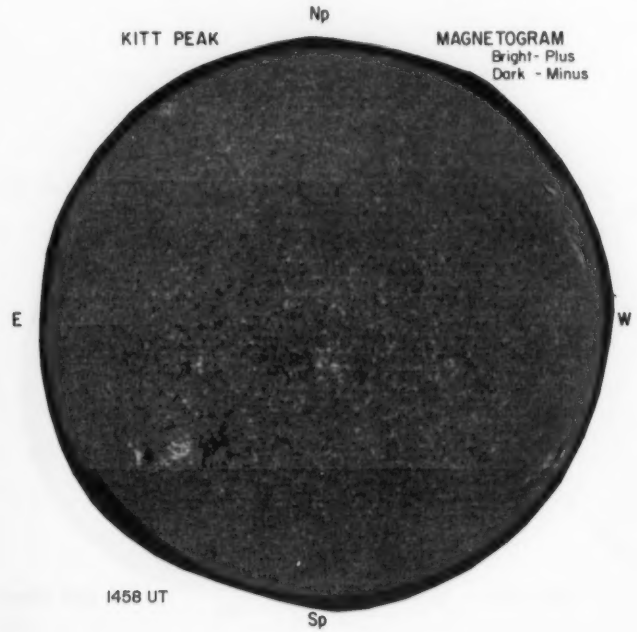
1928 UT

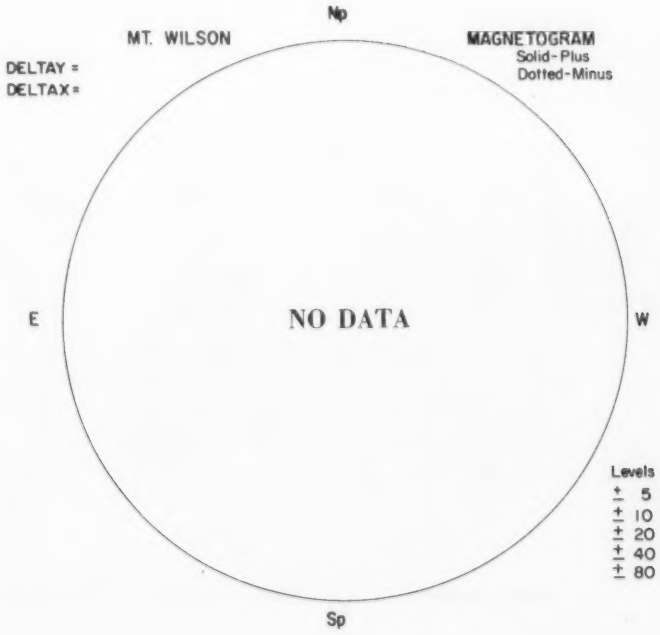
Ant. Temp. Unit 100°K

OCTOBER 6, 1976 (P =26.27, B_0 =6.43, L_0 =64.70)



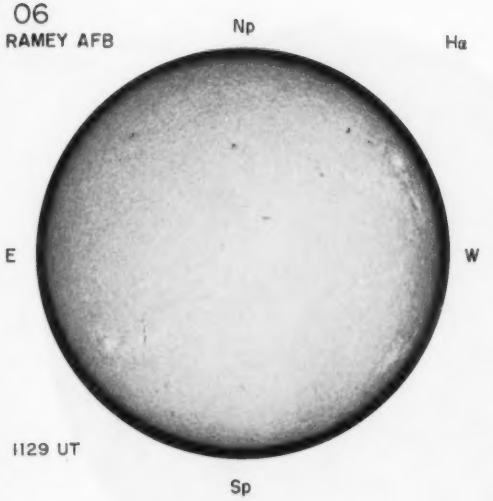






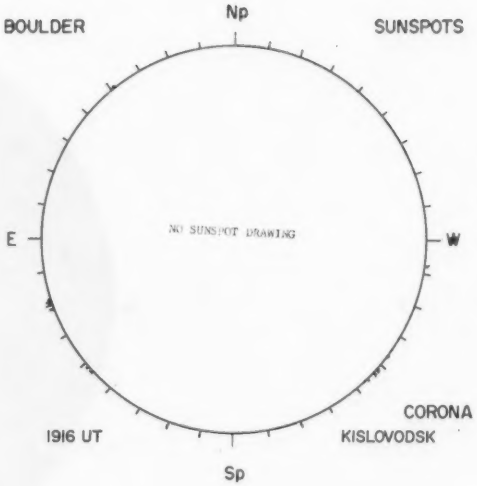
06

RAMEY AFB



1129 UT

Hα BOULDER



1916 UT

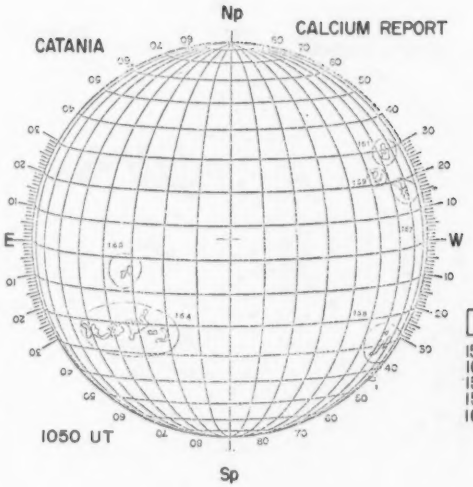
SUNSPOTS

CORONA

KISLOVODSK

CATANIA

CALCIUM REPORT

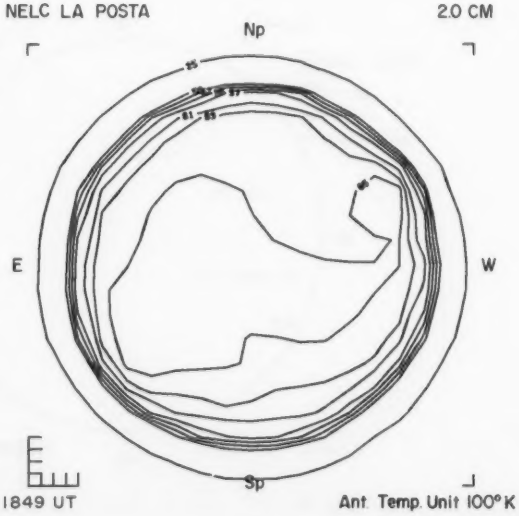


1050 UT

POOR	SS
159-0676-	--
161-0739-	--
158-1267-	--
157-0438-	--
164-2858-	--

NELC LA POSTA

2.0 CM

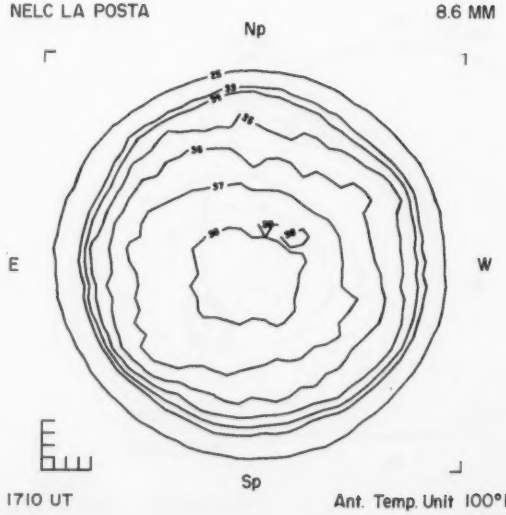


1849 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

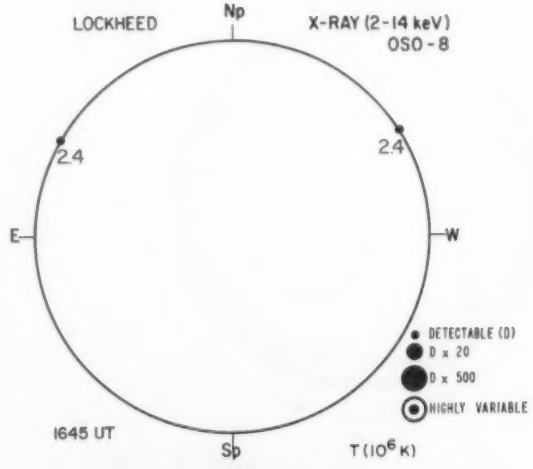
8.6 MM

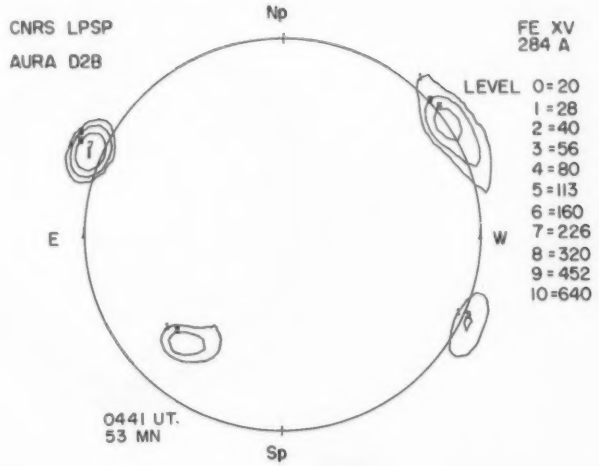


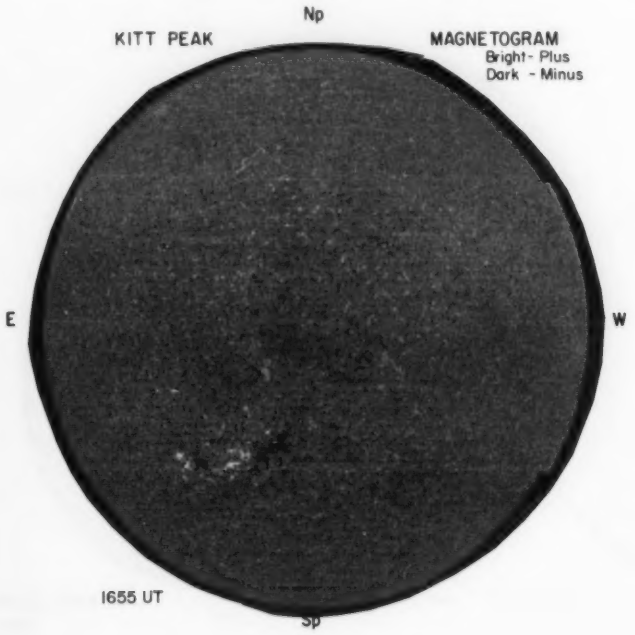
1710 UT

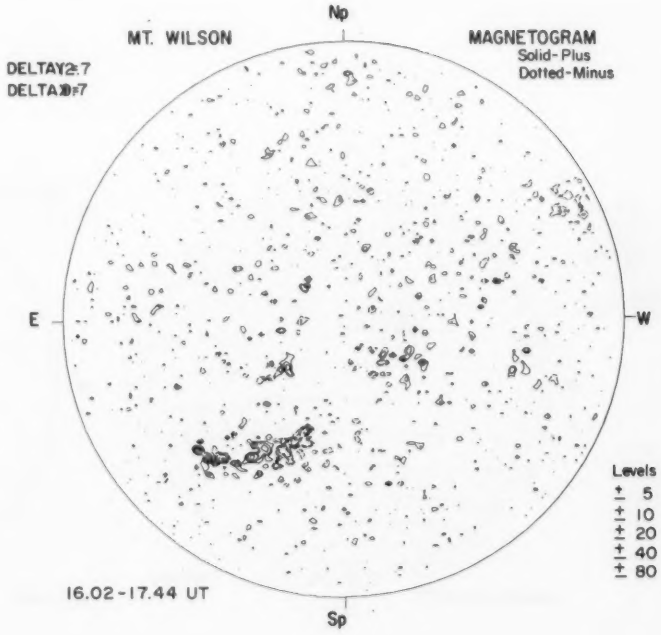
Ant. Temp. Unit 100°K

OCTOBER 7, 1976 (P =26.29, B_o =6.37, L_o =51.50)



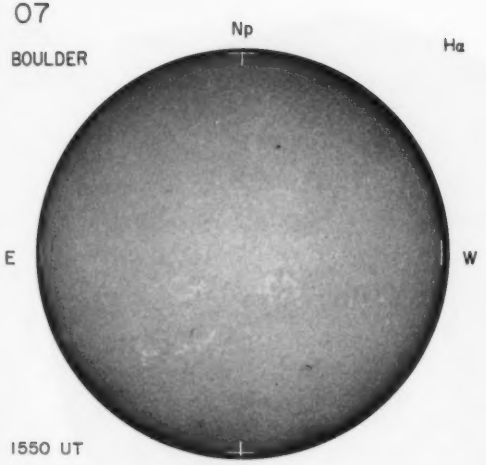






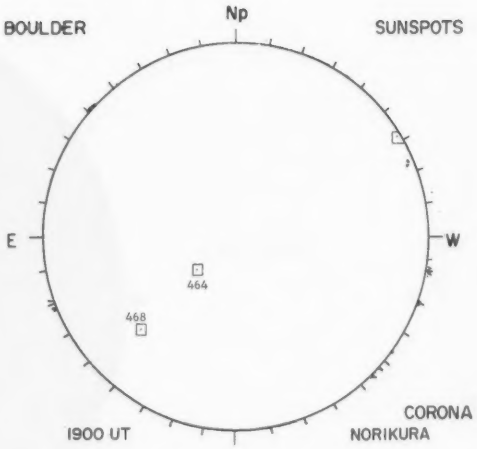
07

BOULDER Hα



1550 UT

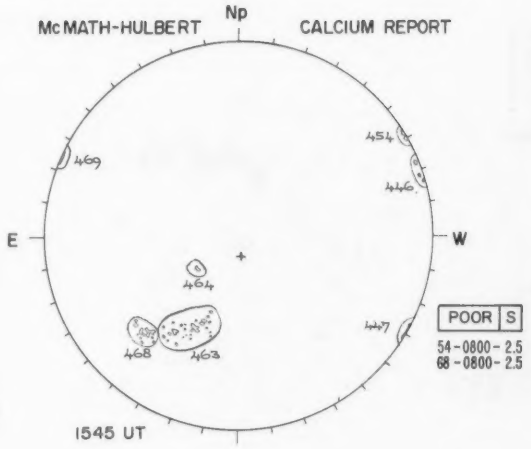
BOULDER SUNSPOTS



1900 UT

CORONA
NORIKURA

McMATH-HULBERT CALCIUM REPORT



1545 UT

POOR	S

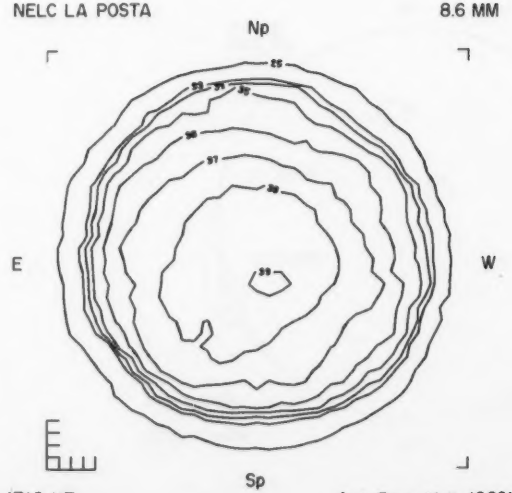
54 - 0800 - 2.5
68 - 0800 - 2.5

NELC LA POSTA 2.0 CM

1634 UT

Ant. Temp. Unit 100°K

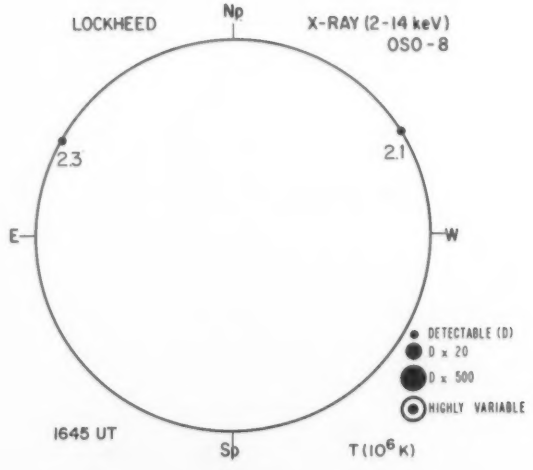
NELC LA POSTA 8.6 MM

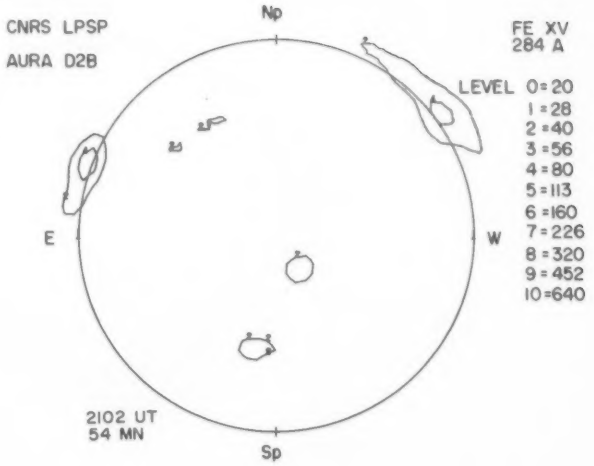


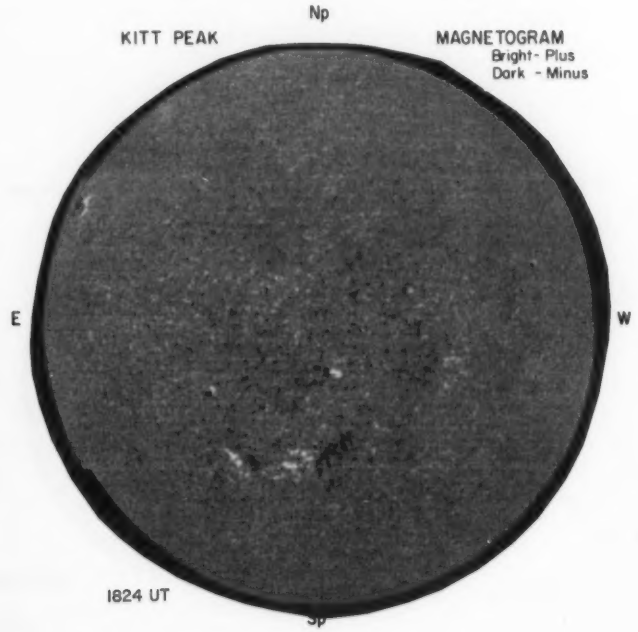
1718 UT

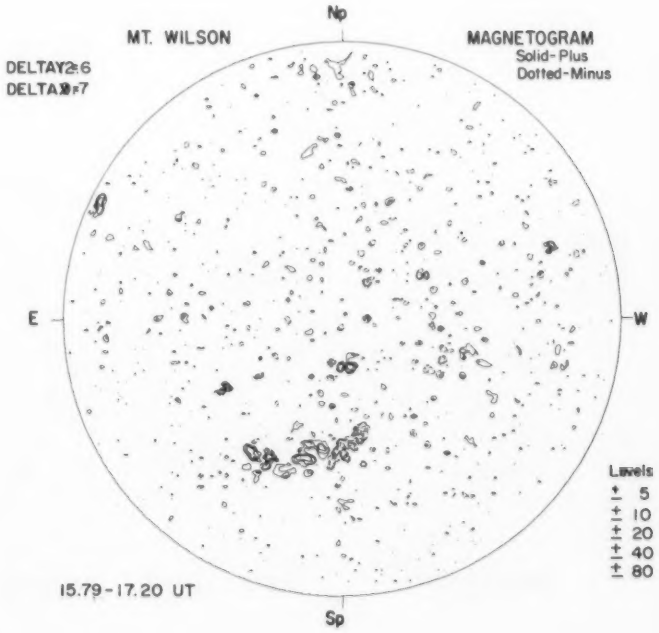
Ant. Temp. Unit 100°K

OCTOBER 8, 1976 (P = 26.3I, B_o = 6.3I, L_o = 38.3I)



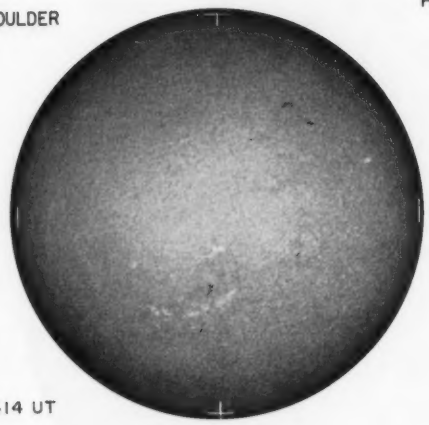






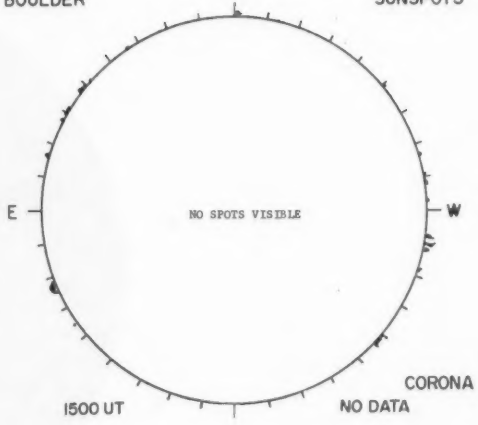
08

BOULDER



1414 UT

Hα BOULDER



1500 UT

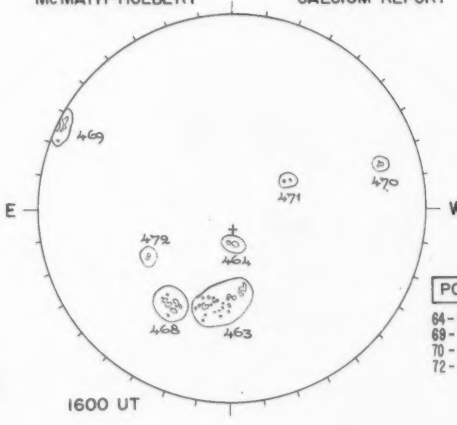
SUNSPOTS

CORONA

NO DATA

McMATH-HULBERT

CALCIUM REPORT



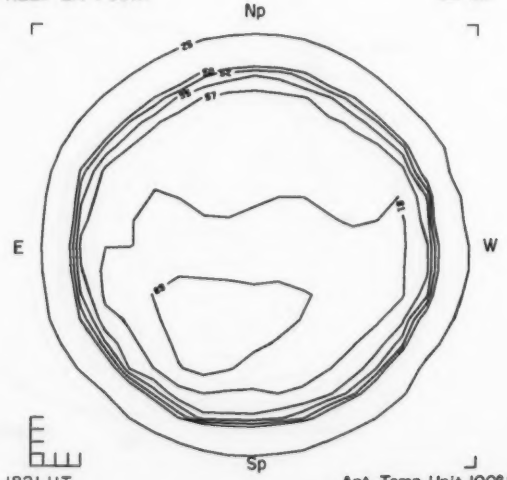
1600 UT

POOR	M

64 - 0200 - 2.5
69 - 1400 - 2.5
70 - 0200 - 2.5
72 - 0100 - 2.5

NELC LA POSTA

2.0 CM



1821 UT

Ant Temp. Unit 100°K

NELC LA POSTA

---- UT

8.6 MM

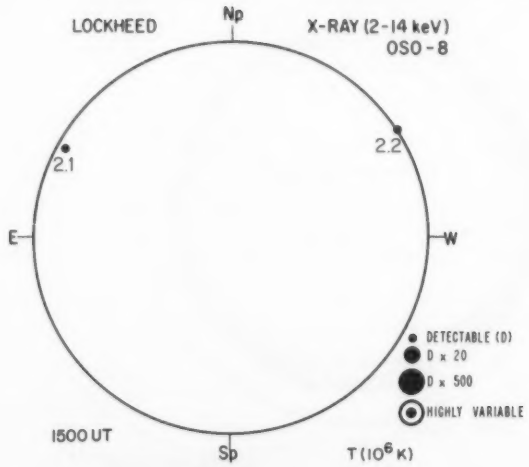
NO DATA

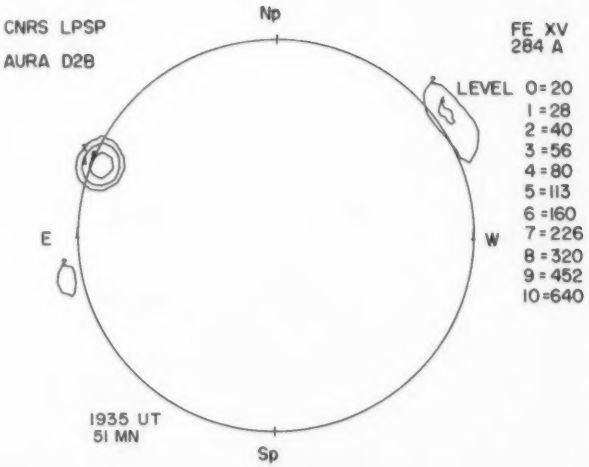
WEATHER

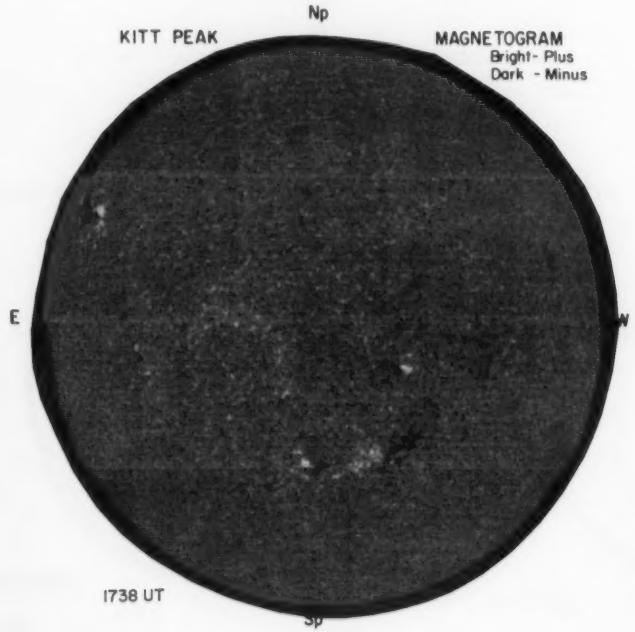
Ant. Temp. Unit 100°K

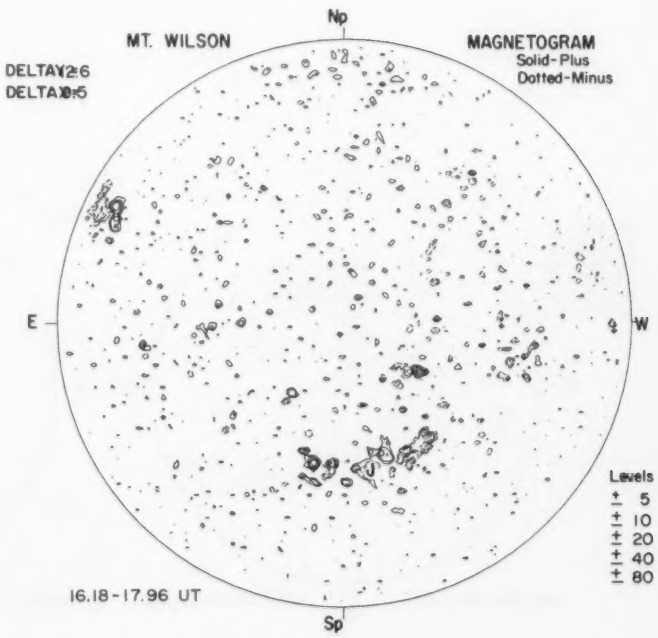
41
Oct 76

OCTOBER 9, 1976 (P = 26.32, B_0 = 6.25, L_0 = 25.12)



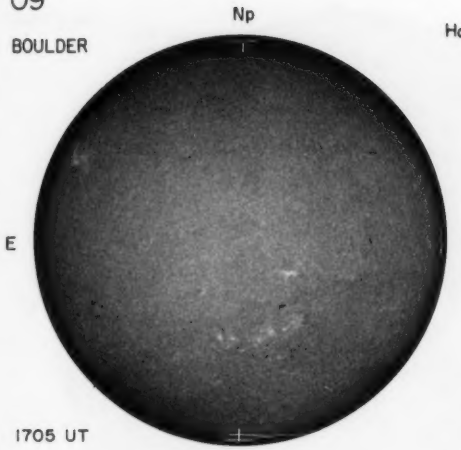






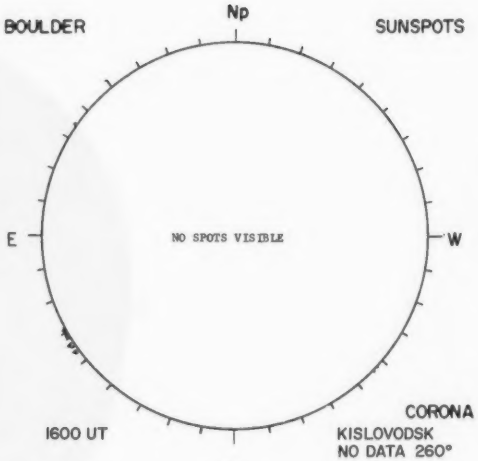
09

BOULDER



1705 UT

Hα BOULDER



1600 UT

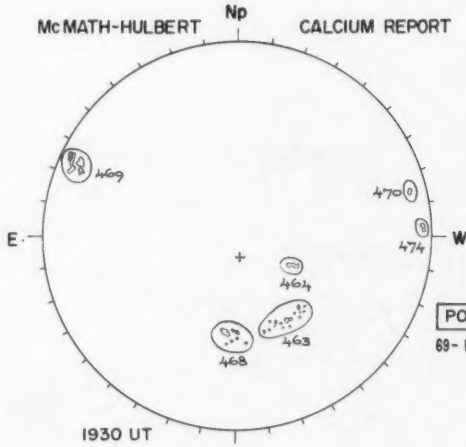
SUNSPOTS

CORONA

KISLOVODSK

NO DATA 260°

McMATH-HULBERT



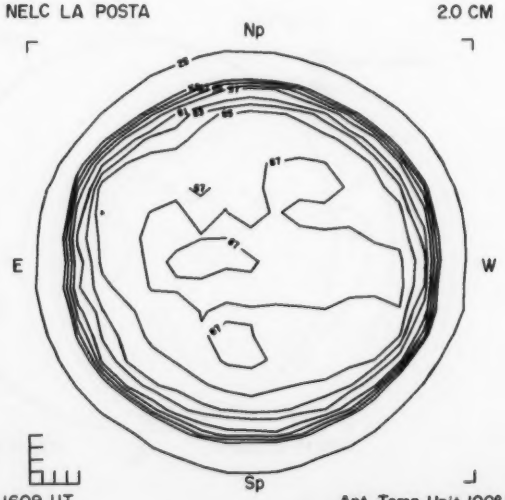
1930 UT

CALCIUM REPORT

POOR | M

69-1400-2.5

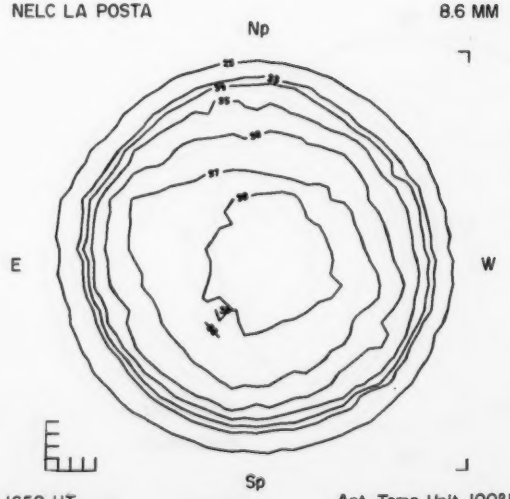
NELC LA POSTA 2.0 CM



1609 UT

Ant. Temp. Unit 100°K

NELC LA POSTA 8.6 MM



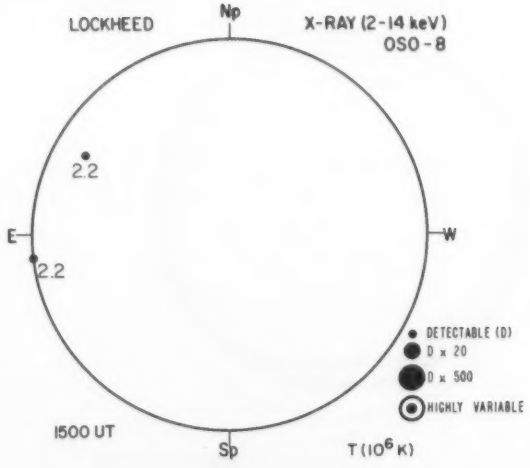
1659 UT

Ant. Temp. Unit 100°K

OCTOBER 10, 1976 (P = 26.33, B_o = 6.19, L_o = 11.92)

LOCKHEED

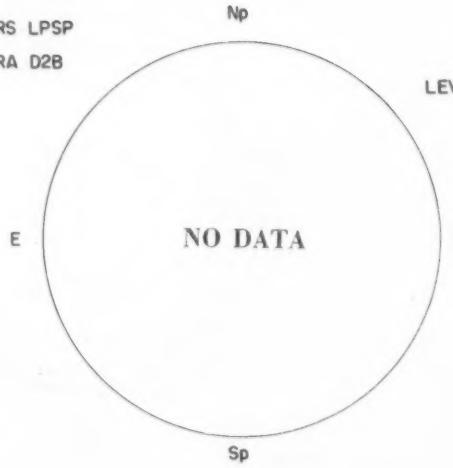
X-RAY (2-14 keV)
OSO-8



CNRS LPSP
AURA D2B

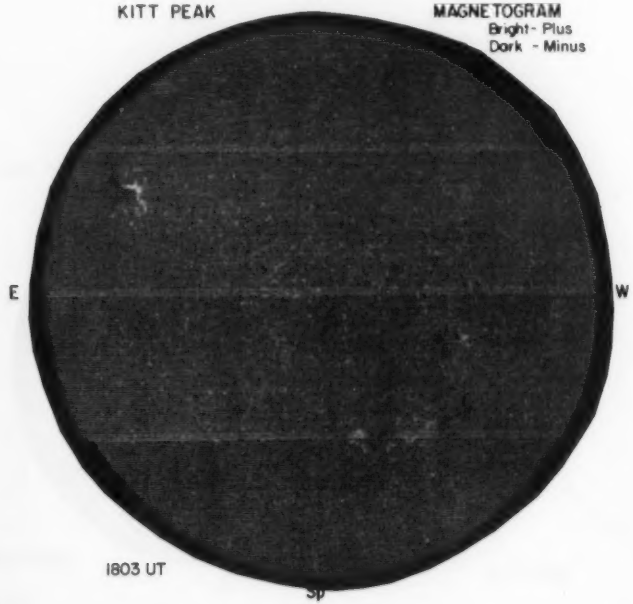
FE XV
284 A

LEVEL 0 = 20
1 = 28
2 = 40
3 = 56
4 = 80
5 = 113
6 = 160
7 = 226
8 = 320
9 = 452
10 = 640



KITT PEAK

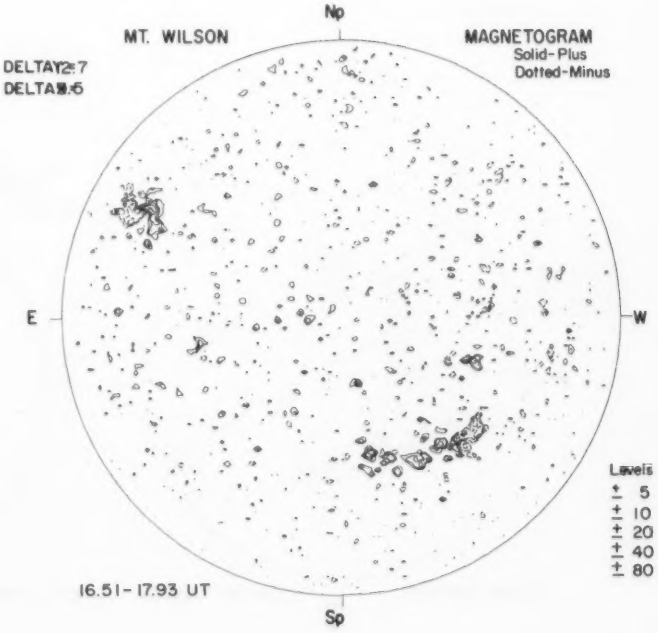
MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON

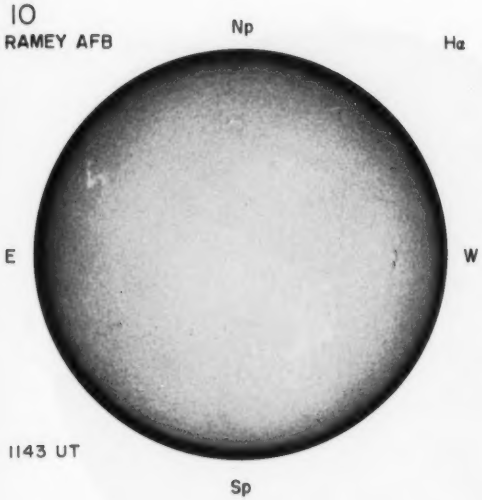
MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY2=7
DELTA[illegible]=5



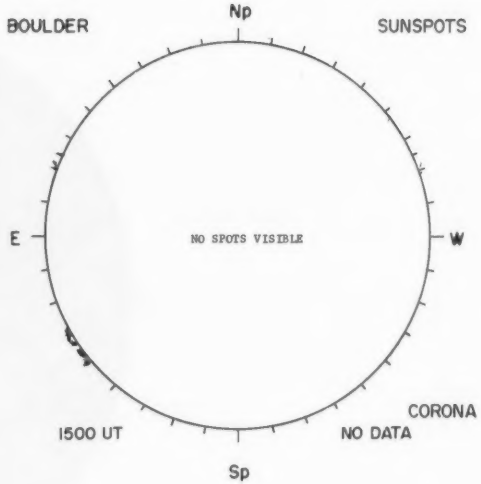
10

RAMEY AFB



1143 UT

Hα BOULDER



1500 UT

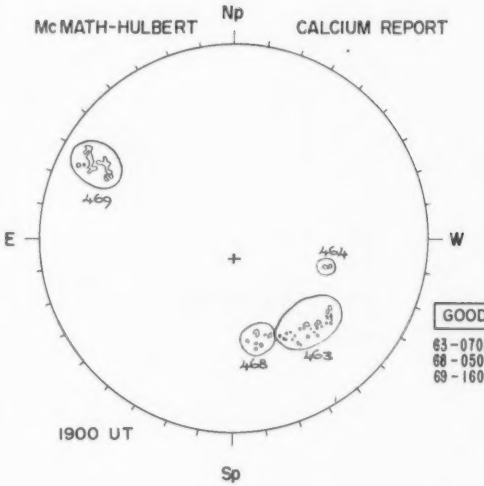
SUNSPOTS

CORONA

NO DATA

McMATH-HULBERT

CALCIUM REPORT



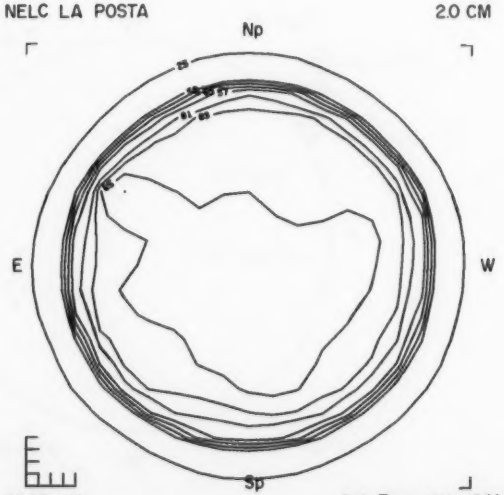
1900 UT

GOOD	D

63 - 0700 - 2.5
68 - 0500 - 2.5
69 - 1600 - 3.0

NELC LA POSTA

2.0 CM

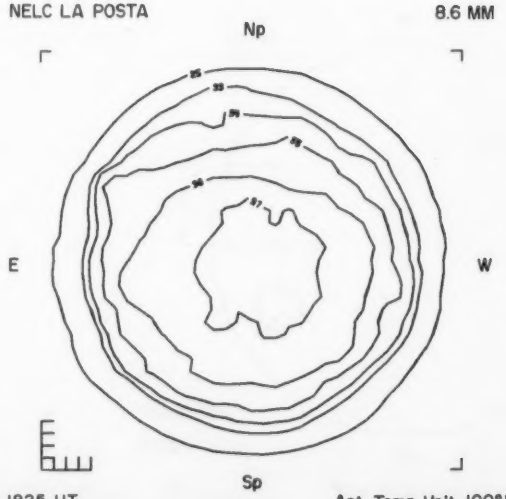


2002 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

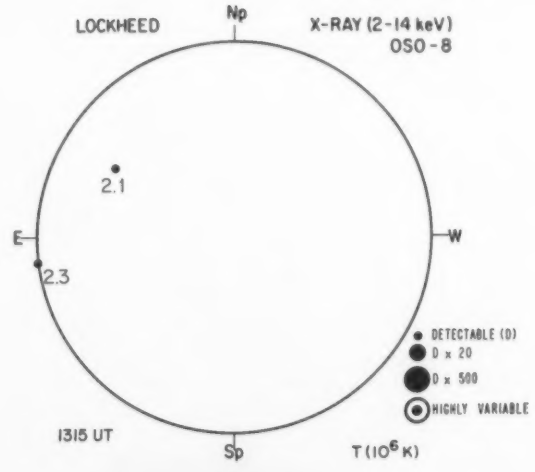
8.6 MM

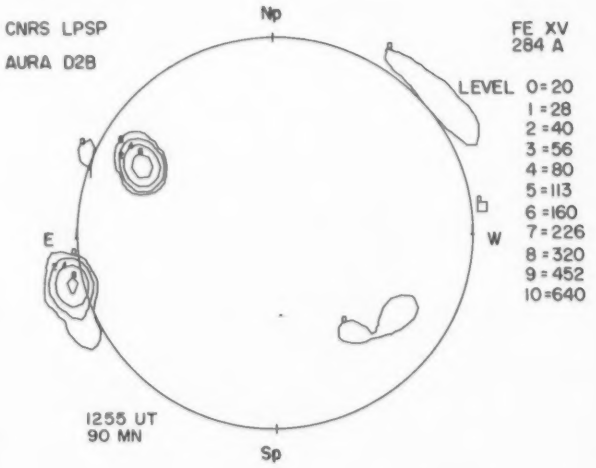


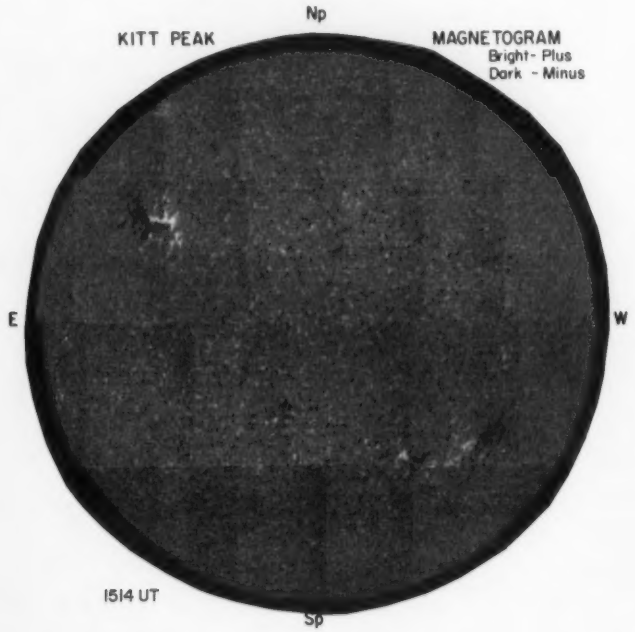
1825 UT

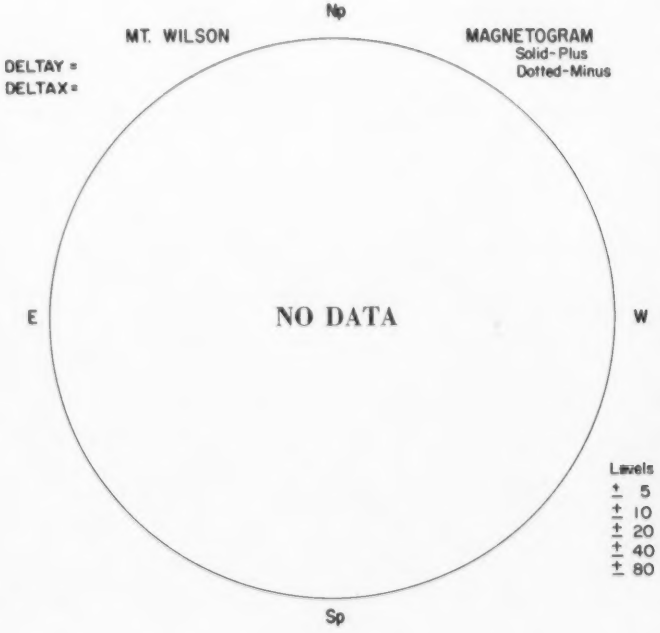
Ant. Temp. Unit 100°K

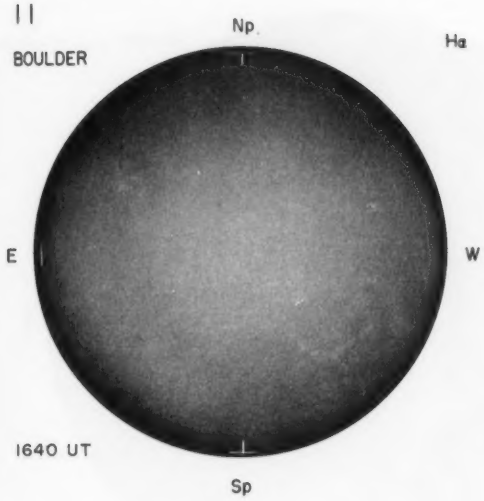
OCTOBER 11, 1976 (P = 26.33, B_0 = 6.12, L_0 = 358.73)



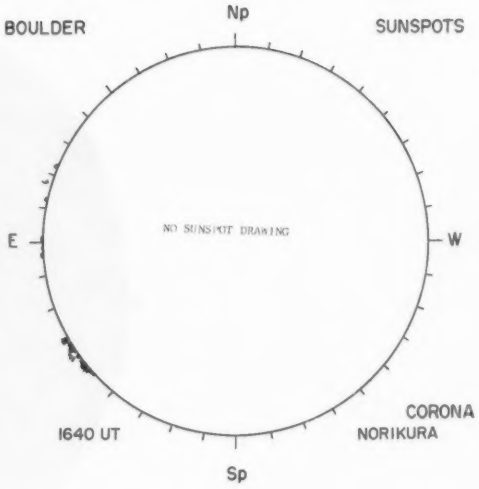


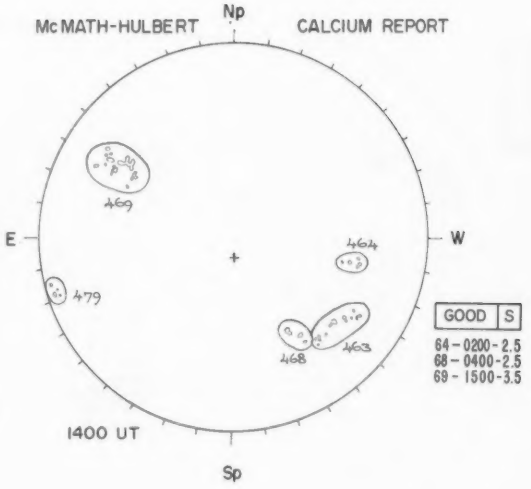






Hα





NELC LA POSTA

Np

2.0 CM

NO DATA

E

CALIBRATION

W

Sp

1936 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

Np

8.6 MM

NO DATA

E

CALIBRATION

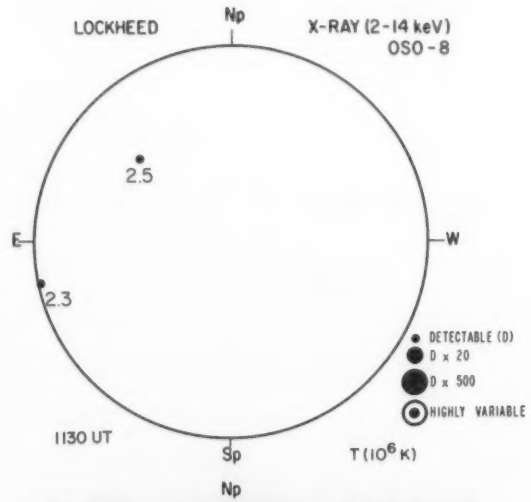
W

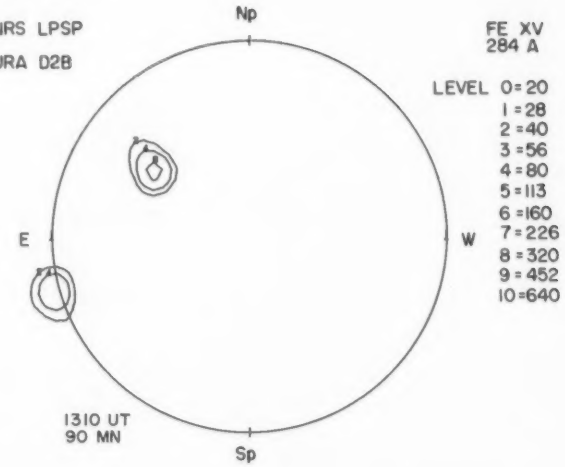
Sp

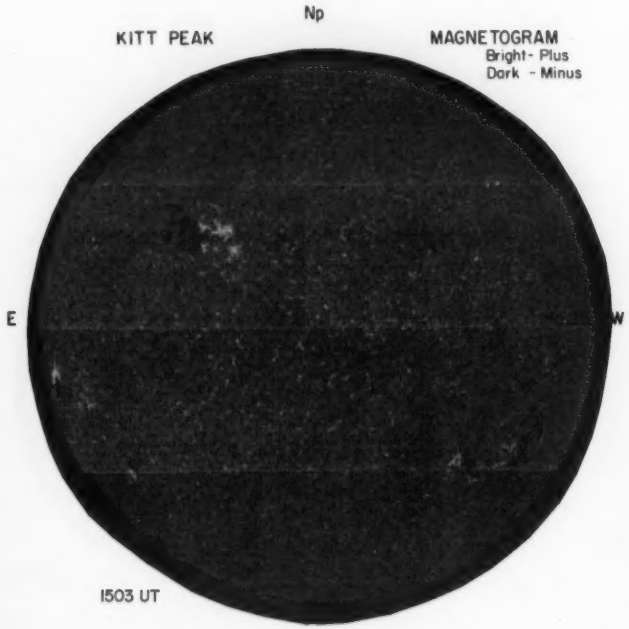
1747 UT

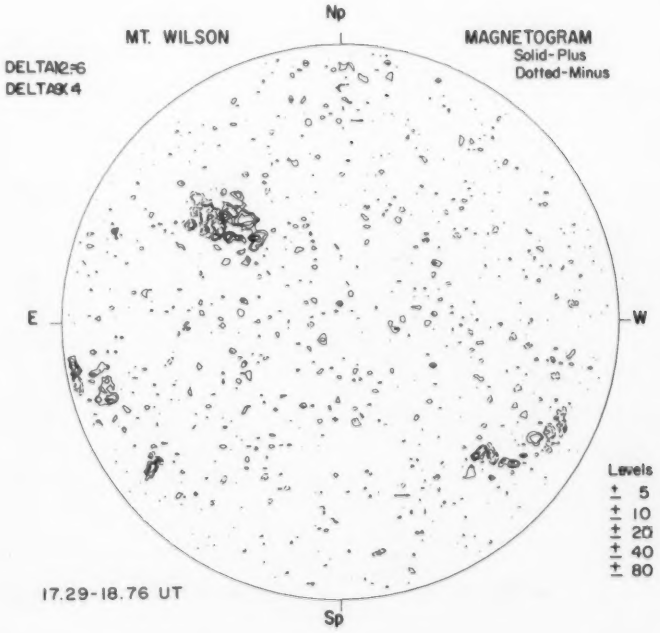
Ant. Temp. Unit 100°K

OCTOBER 12, 1976 (P =26.32, B_o =6.05, L_o =345.54)



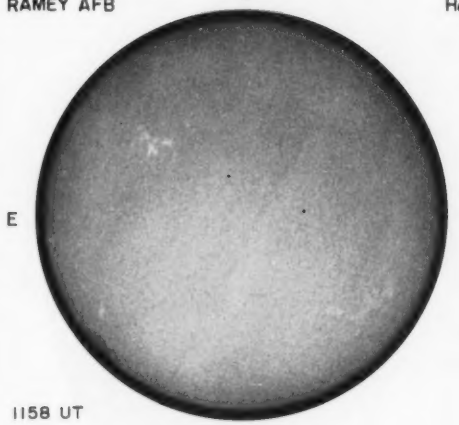






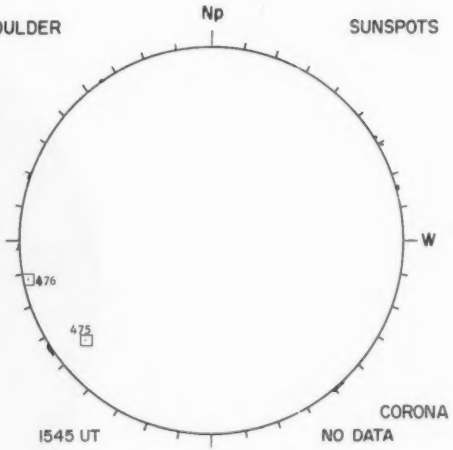
12

RAMEY AFB



1158 UT

BOULDER



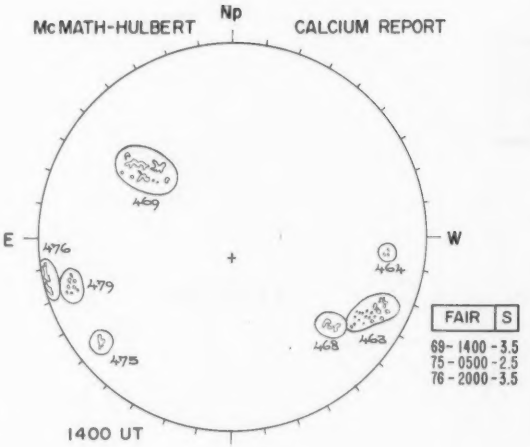
1545 UT

CORONA

NO DATA

McMATH-HULBERT

CALCIUM REPORT



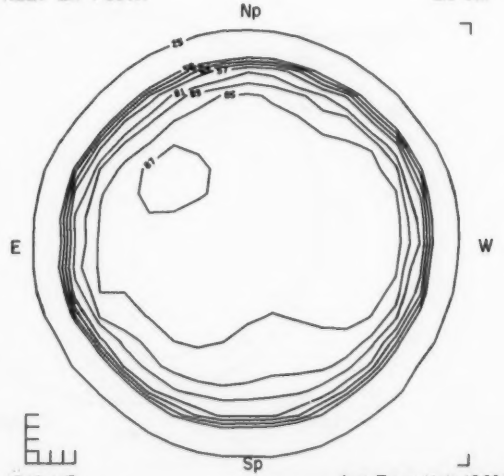
FAIR	S

69 - 1400 - 3.5
75 - 0500 - 2.5
76 - 2000 - 3.5

1400 UT

NELC LA POSTA

2.0 CM



1819 UT

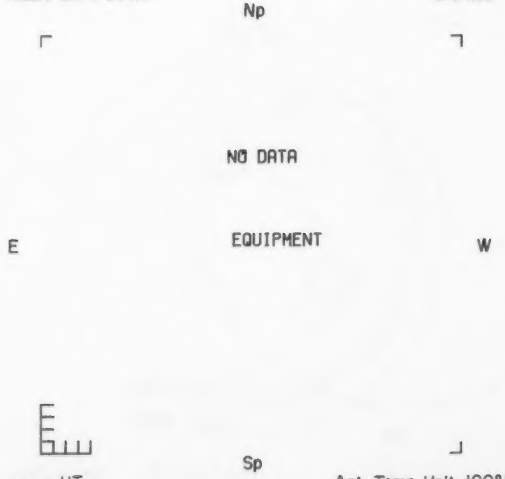
Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM

NO DATA

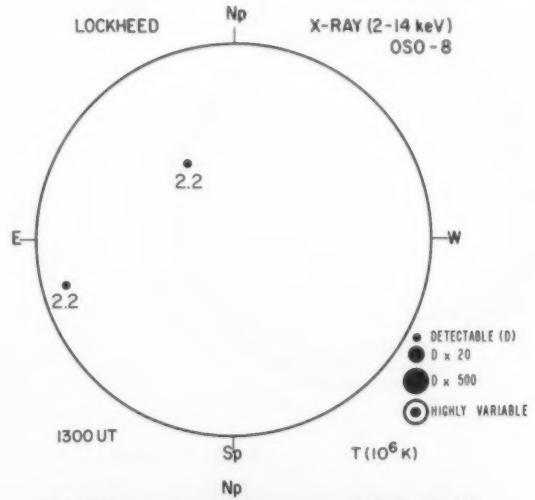
EQUIPMENT

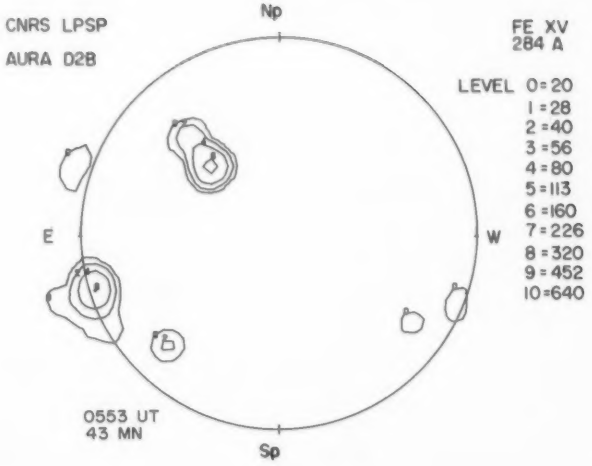


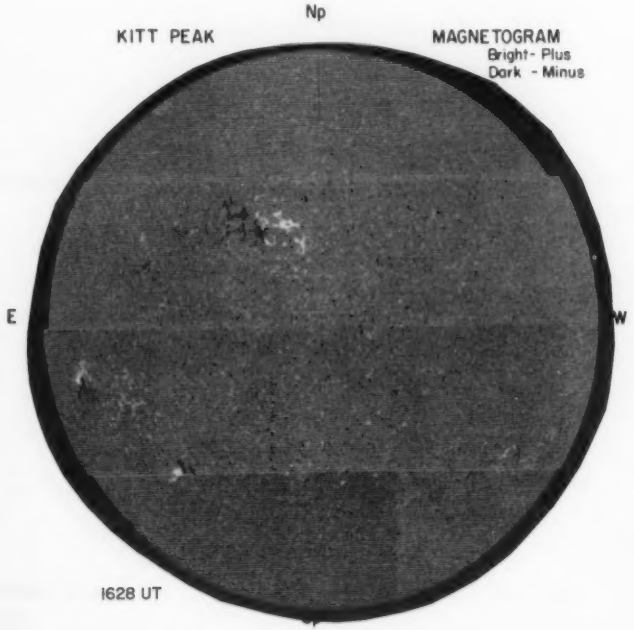
---- UT

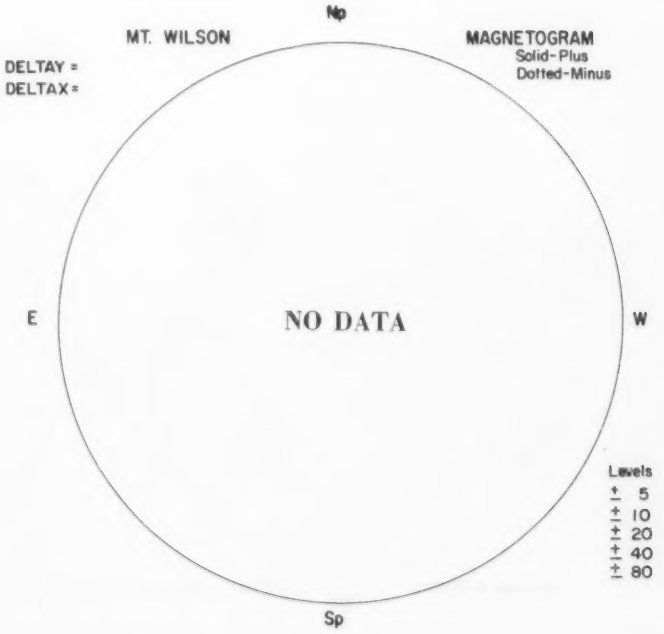
Ant. Temp. Unit 100°K

OCTOBER 13, 1976 (P = 26.30, B_o = 5.98, L_o = 332.35)



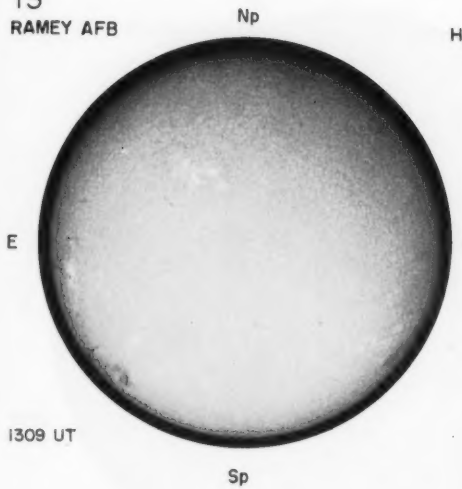




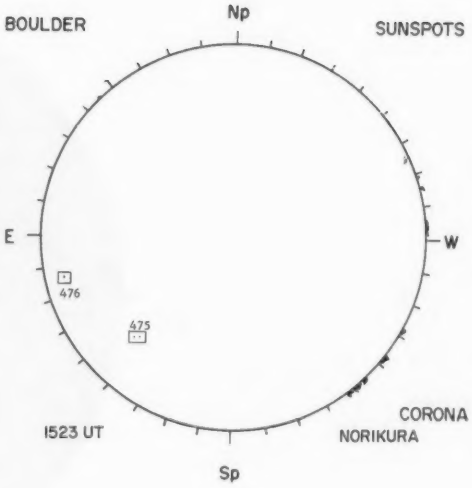


13

RAMEY AFB



Hα BOULDER



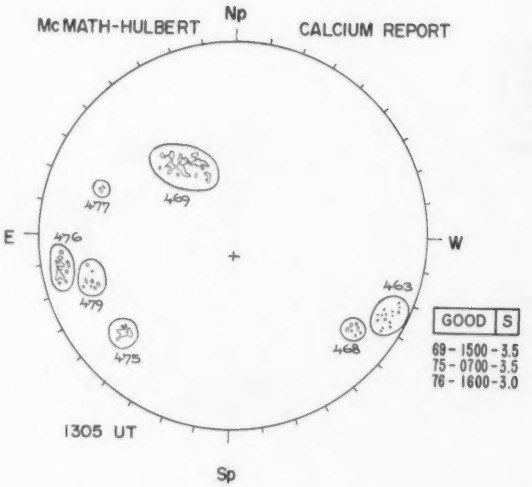
SUNSPOTS

CORONA

NORIKURA

McMATH-HULBERT

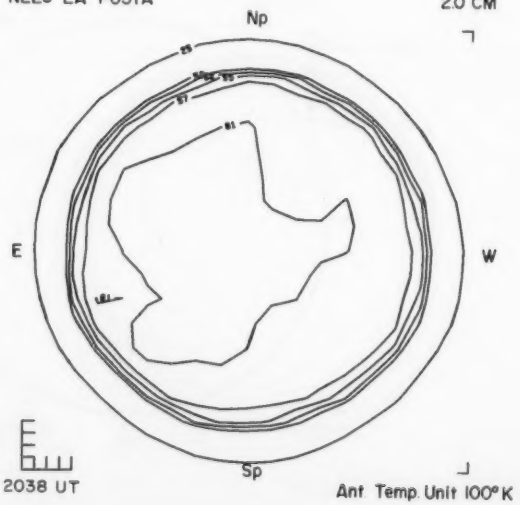
CALCIUM REPORT



GOOD	S

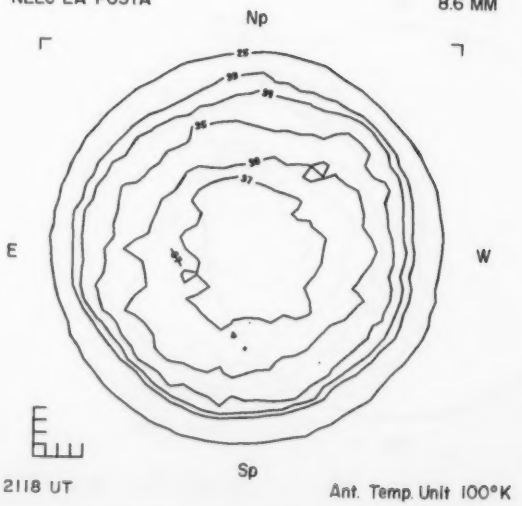
69 - 1500 - 3.5
75 - 0700 - 3.5
76 - 1600 - 3.0

NELC LA POSTA 2.0 CM



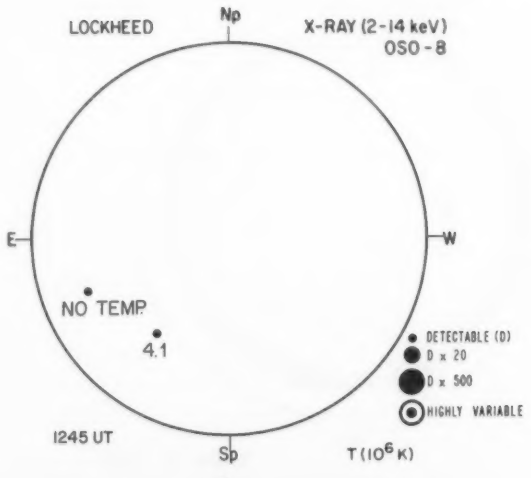
Ant. Temp. Unit 100°K

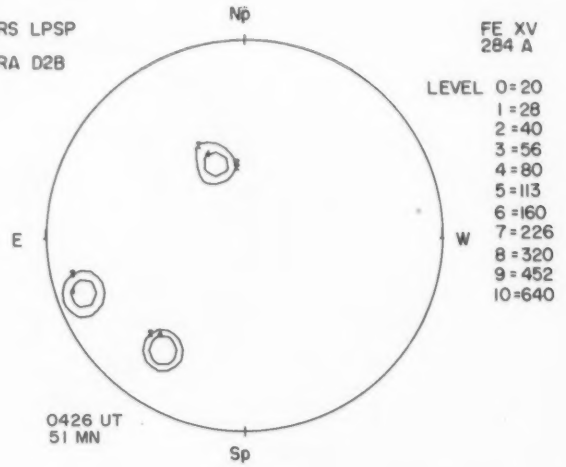
NELC LA POSTA 8.6 MM

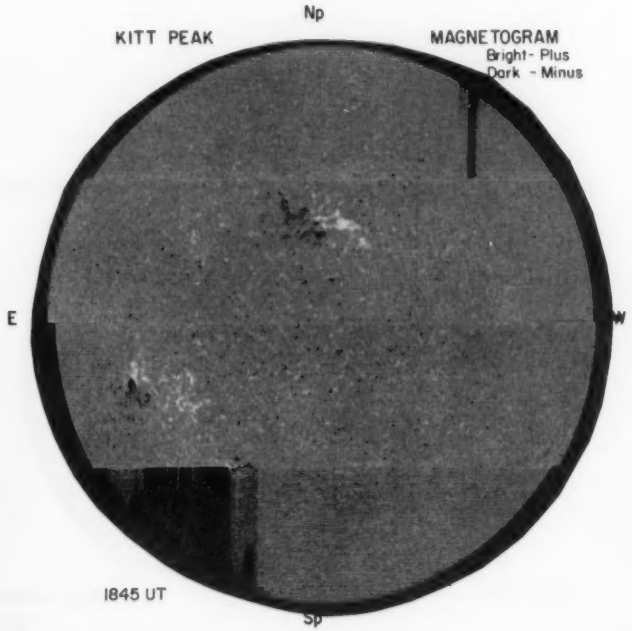


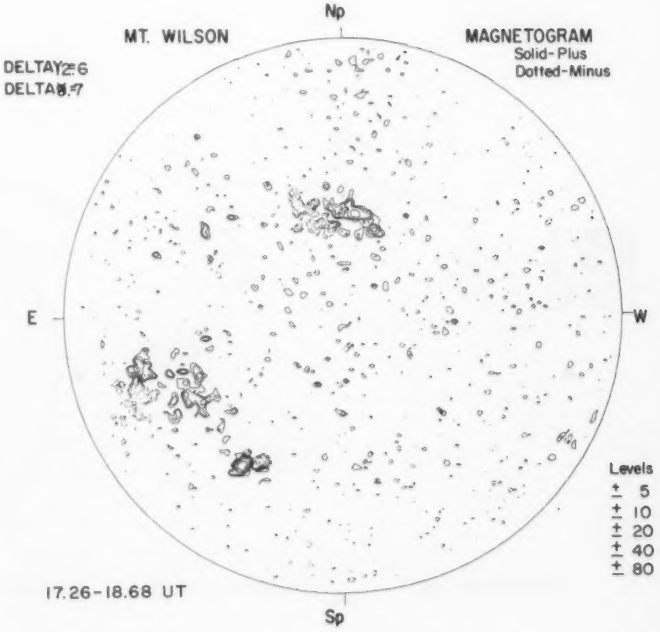
Ant. Temp. Unit 100°K

OCTOBER 14, 1976 (P = 26.28, B_0 = 5.91, L_0 = 319.16)

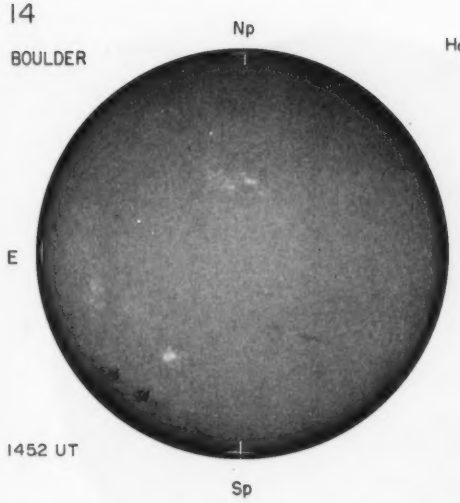


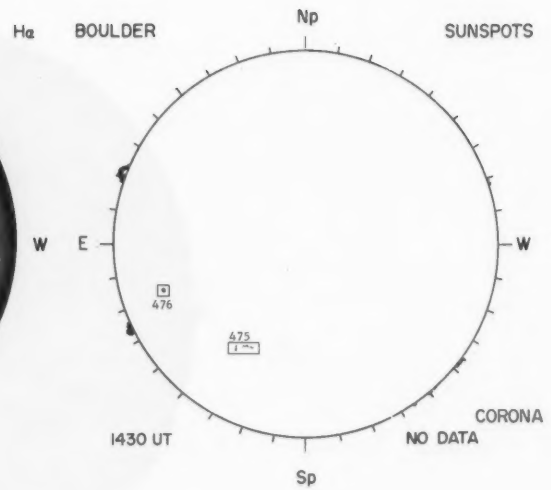


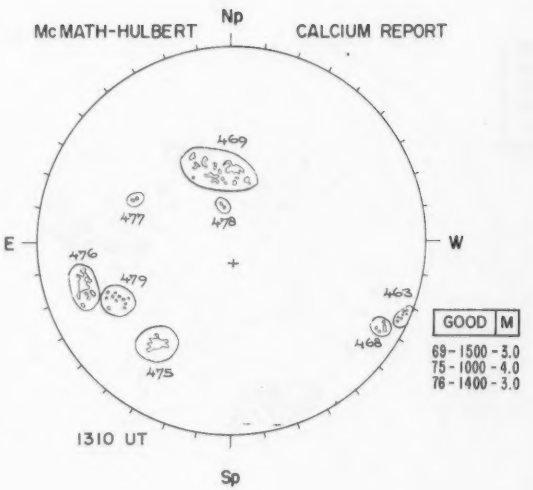


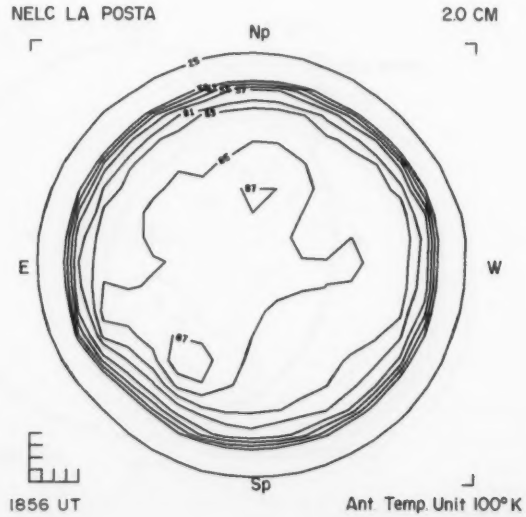


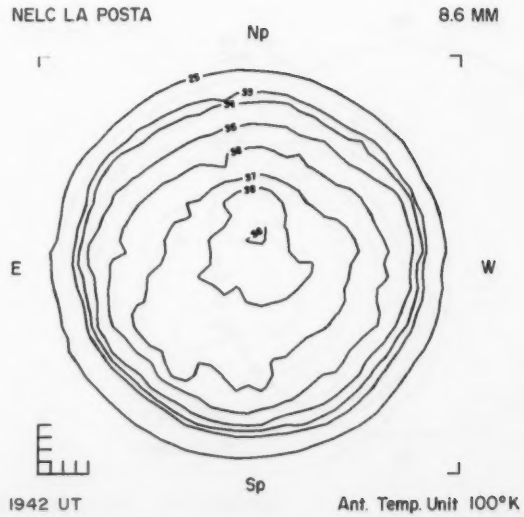
14


BOULDER
Np
E
W
Sp
1452 UT


Hα
BOULDER
Np
E
W
Sp
1430 UT
476
475
SUNSPOTS
CORONA
NO DATA

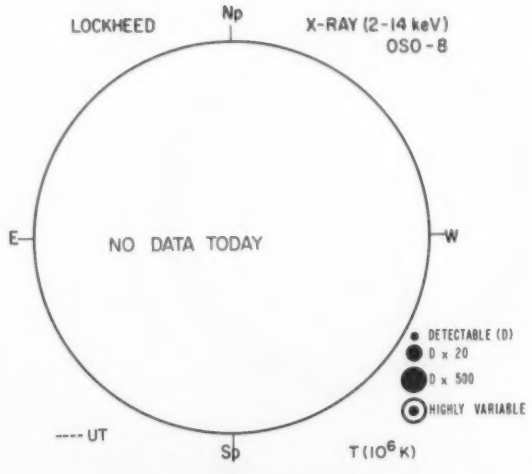

McMATH-HULBERT
Np
CALCIUM REPORT
E
W
Sp
1310 UT
469
477
478
476
479
463
468
475
GOOD M
69 - 1500 - 3.0
75 - 1000 - 4.0
76 - 1400 - 3.0


NELC LA POSTA
2.0 CM
Np
E
W
Sp
1856 UT
Ant. Temp. Unit 100°K

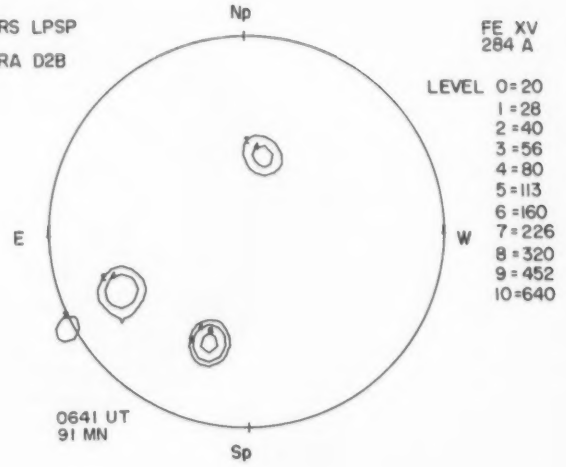

NELC LA POSTA
8.6 MM
Np
E
W
Sp
1942 UT
Ant. Temp. Unit 100°K

OCTOBER 15, 1976 (P = 26.24, B_o = 5.84, L_o = 305.97)

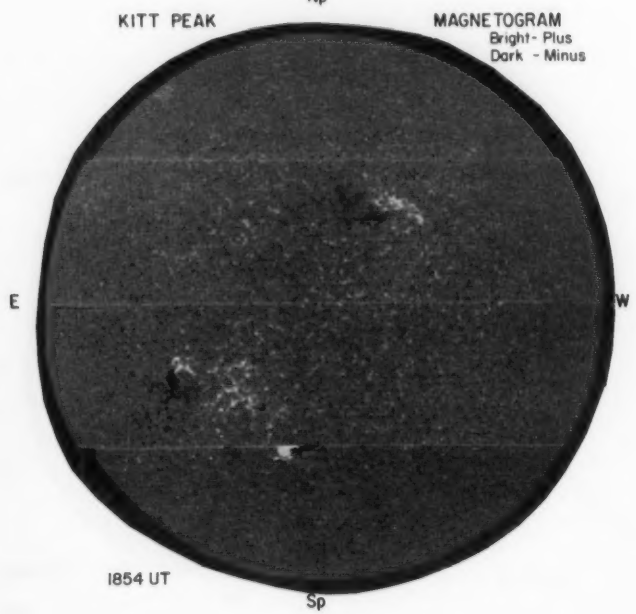
LOCKHEED
X-RAY (2-14 keV)
OSO-8



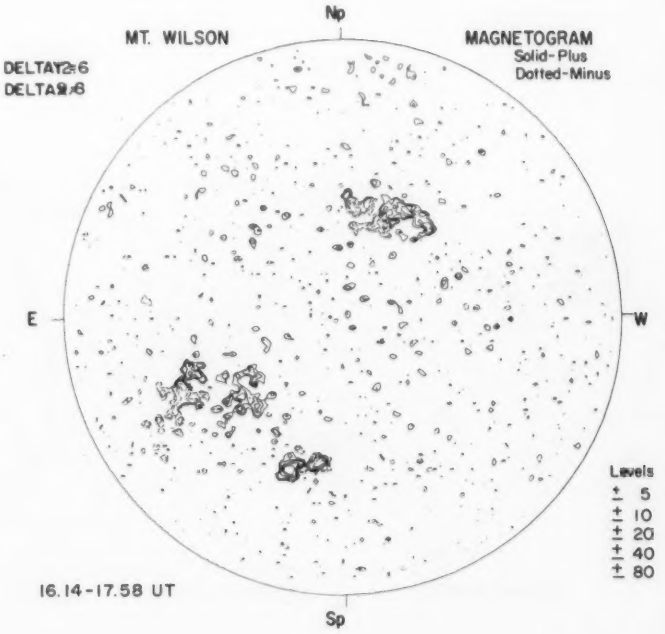
CNRS LPSP
AURA D2B
FE XV
284 A



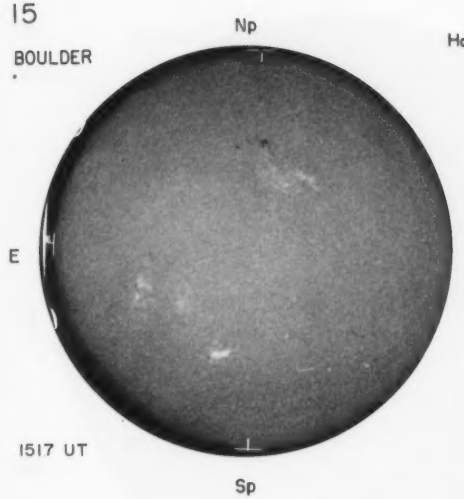
KITT PEAK
MAGNETOGRAM
Bright - Plus
Dark - Minus

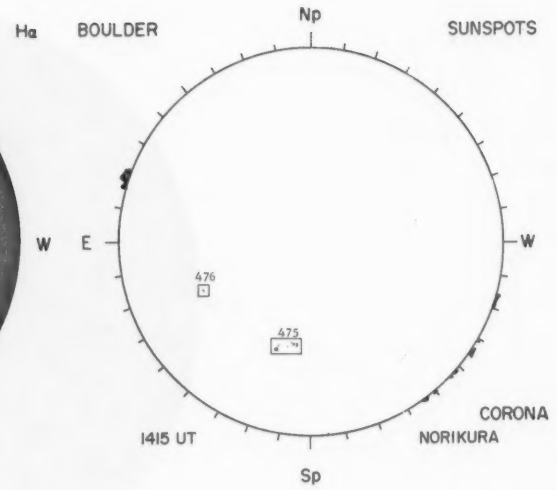


MT. WILSON
MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTA ≥ 6
DELTA ≥ 6



15

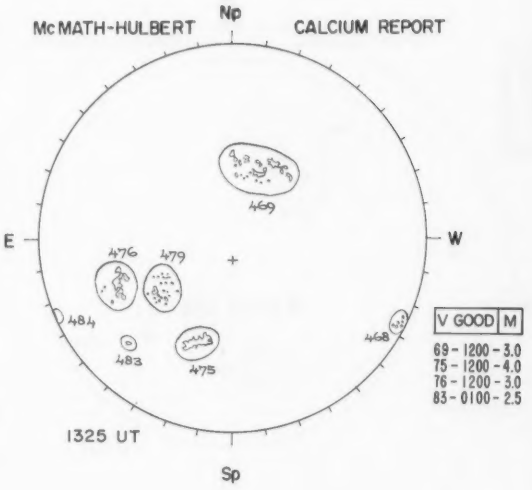




SUNSPOTS

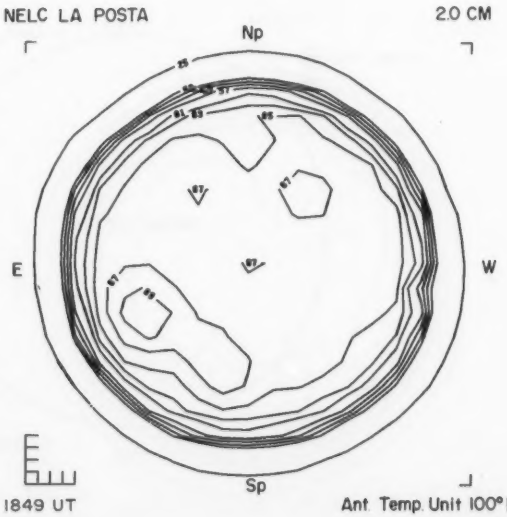
CORONA

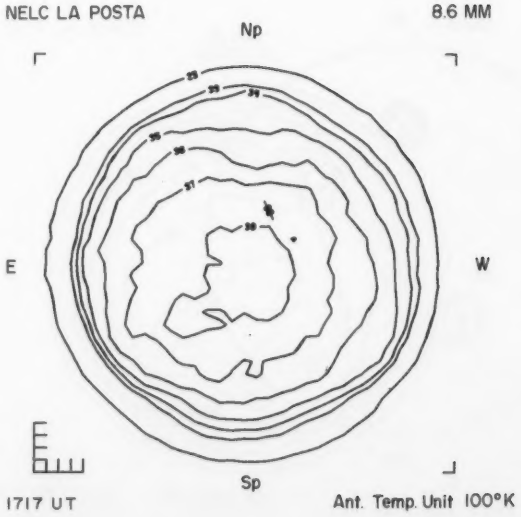
NORIKURA



CALCIUM REPORT

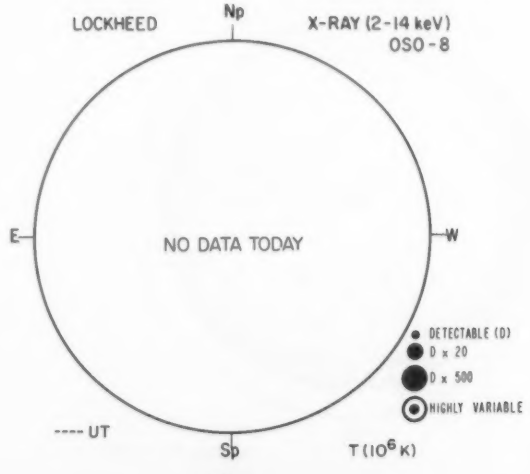
V GOOD	M
69 - 1200 - 3.0	
75 - 1200 - 4.0	
76 - 1200 - 3.0	
83 - 0100 - 2.5	

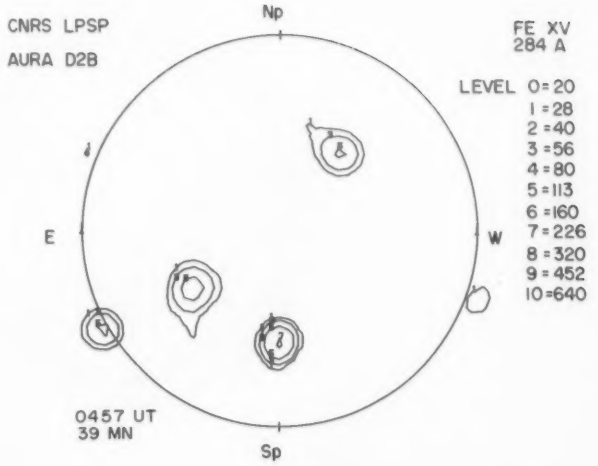


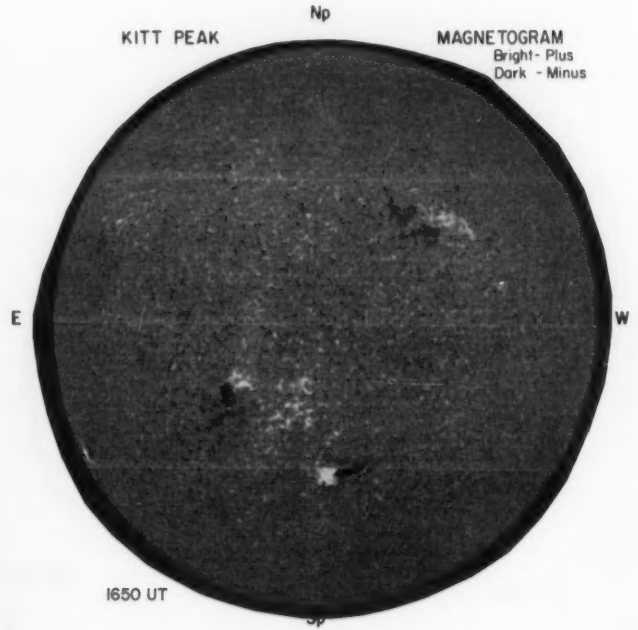


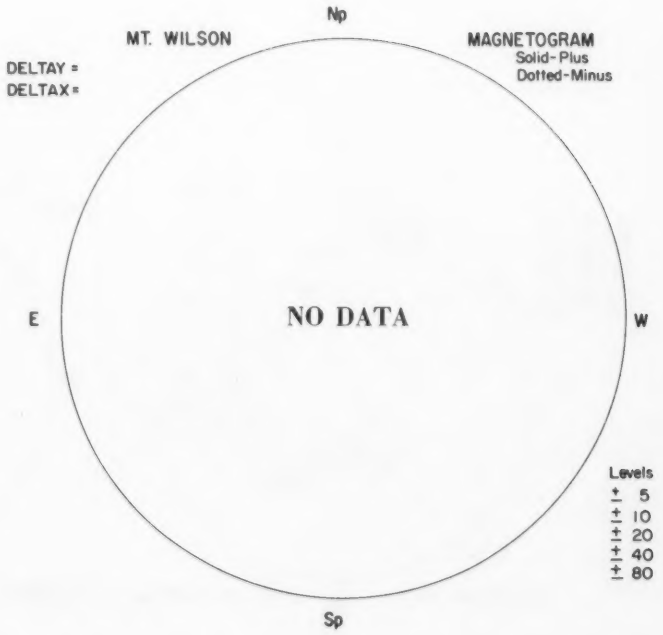
55
Oct 76

OCTOBER 16, 1976 (P = 26.20, B_o = 5.76, L_o = 292.78)

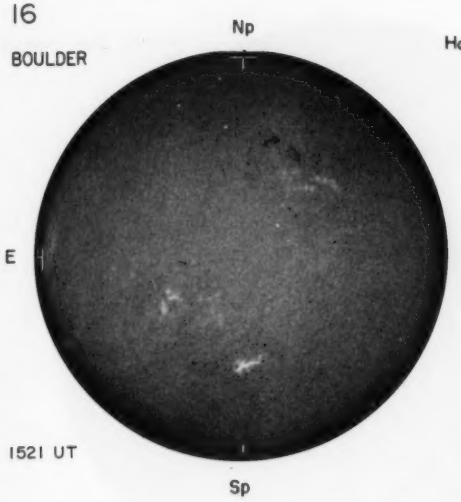


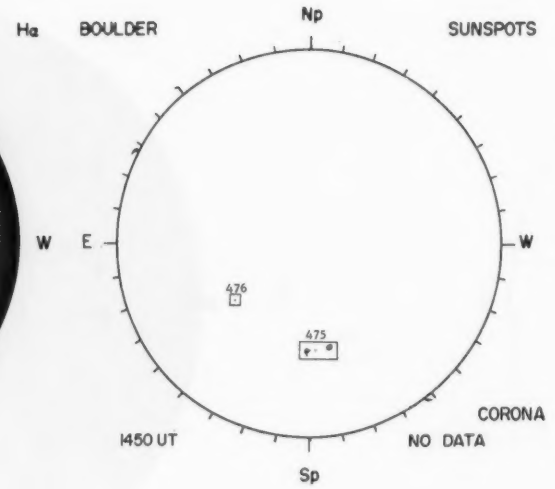






16

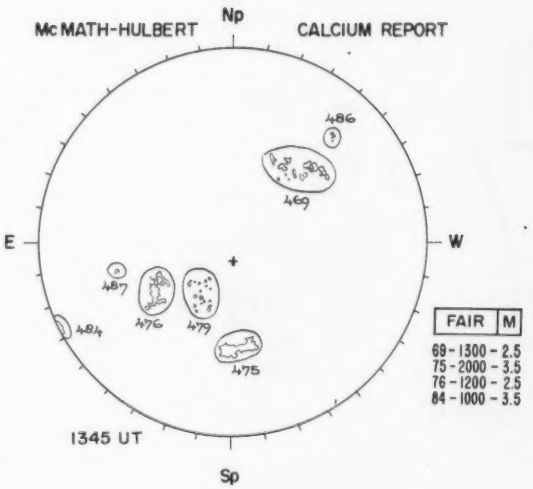




SUNSPOTS

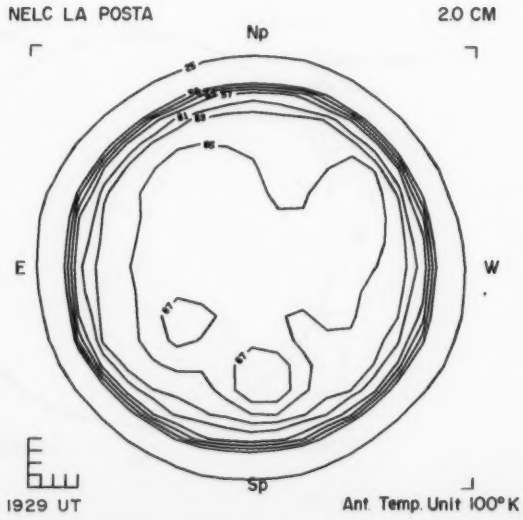
CORONA

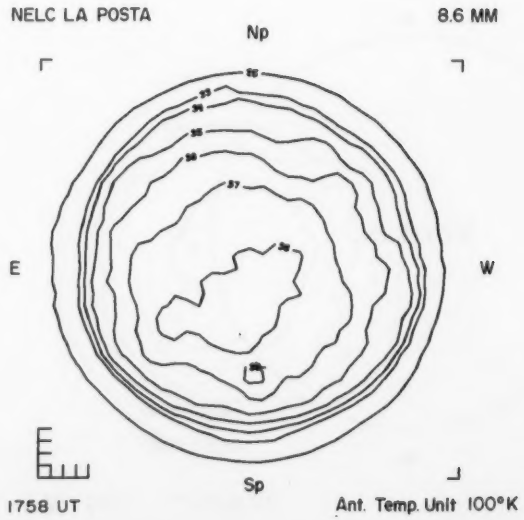
NO DATA



CALCIUM REPORT

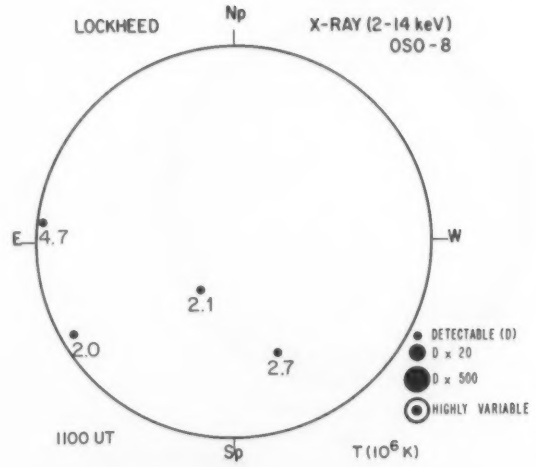
FAIR	M
68 - 1300 - 2.5	
75 - 2000 - 3.5	
76 - 1200 - 2.5	
84 - 1000 - 3.5	

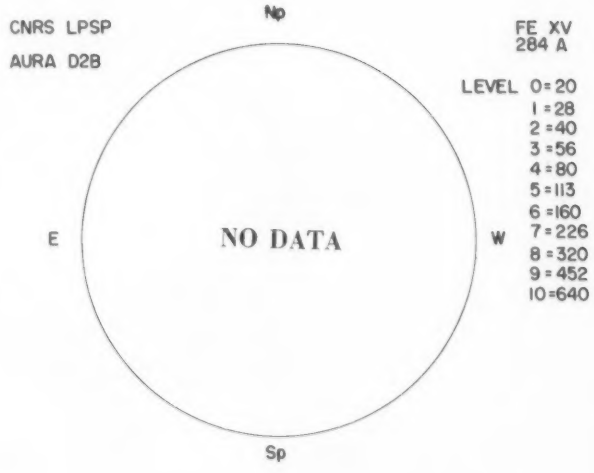


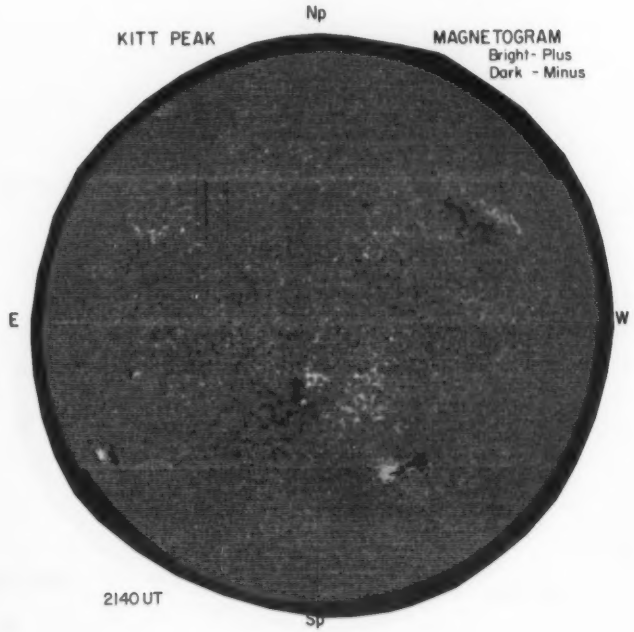


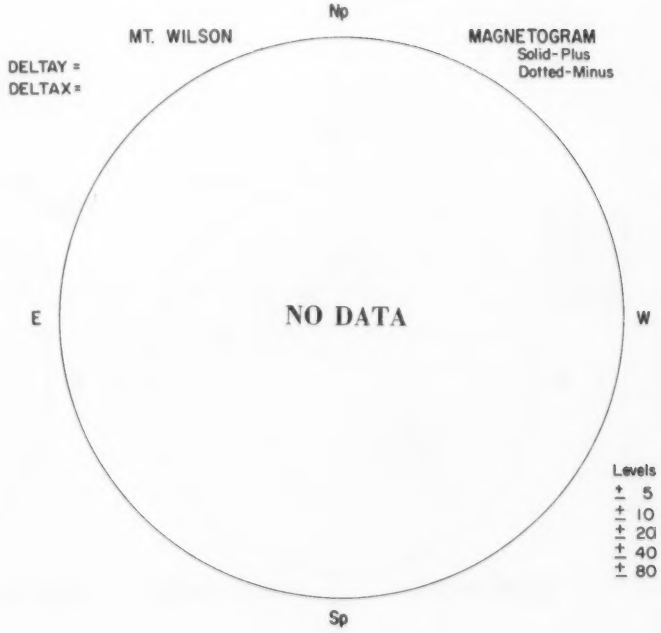
57
Oct 76

OCTOBER 17, 1976 (P = 26.16, B_o = 5.68, L_o = 279.59)





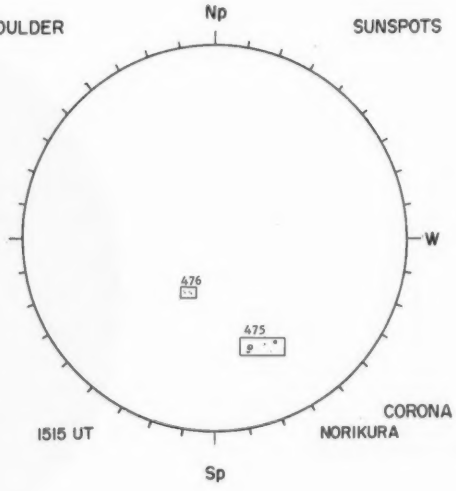




17

RAMEY AFB

Hα BOULDER



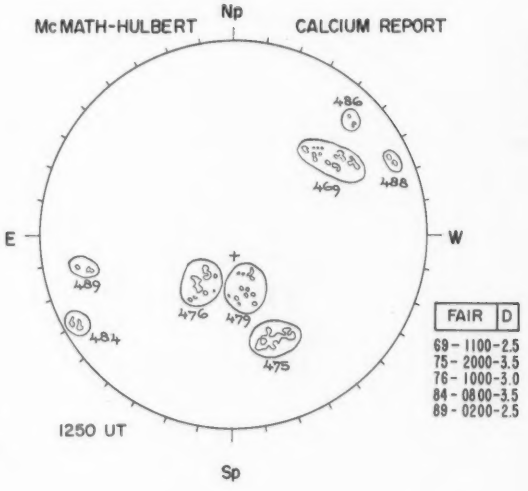
1515 UT

SUNSPOTS

CORONA

NORIKURA

McMATH-HULBERT



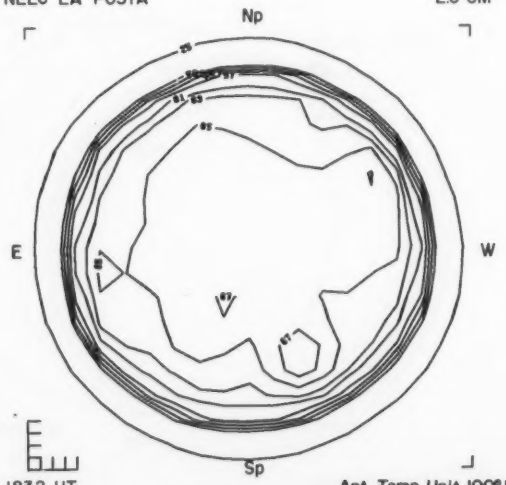
1250 UT

CALCIUM REPORT

FAIR	D

69 - 1100 - 2.5
75 - 2000 - 3.5
76 - 1000 - 3.0
84 - 0800 - 3.5
89 - 0200 - 2.5

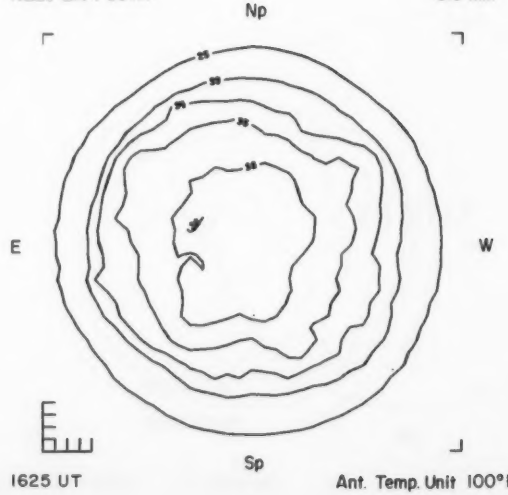
NELC LA POSTA 2.0 CM



1832 UT

Ant. Temp. Unit 100°K

NELC LA POSTA 8.6 MM

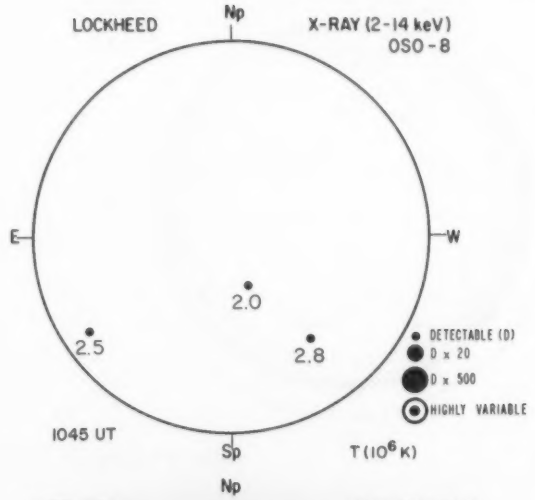


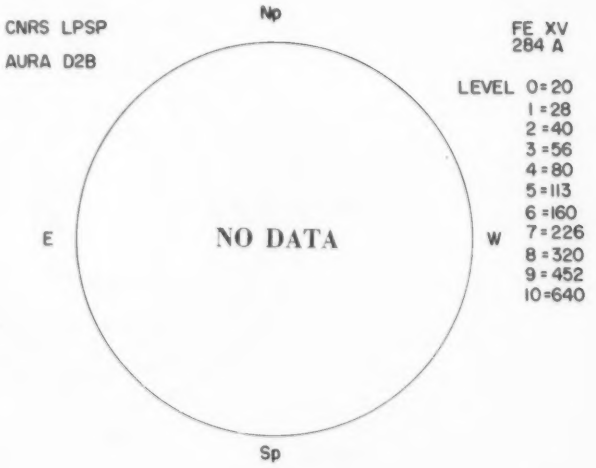
1625 UT

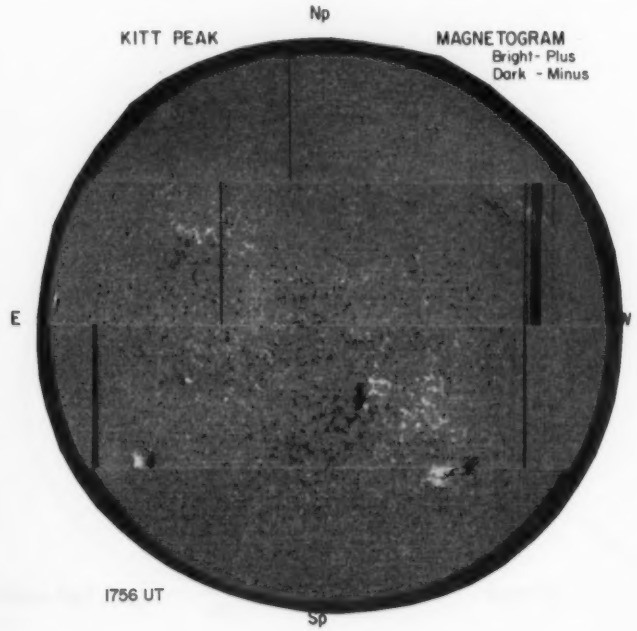
Ant. Temp. Unit 100°K

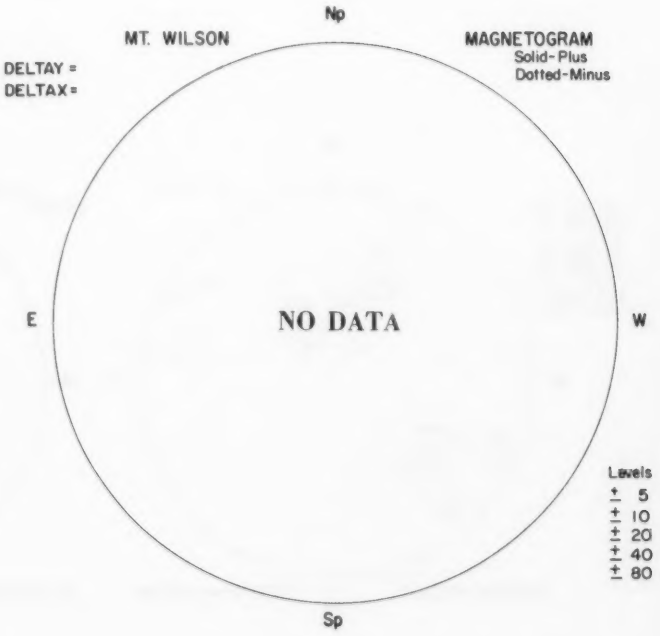
59
Oct 76

OCTOBER 18, 1976 (P = 26.10, B_o = 5.60, L_o = 266.40)



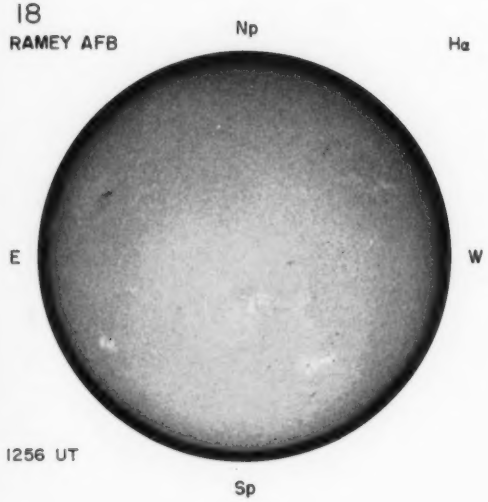






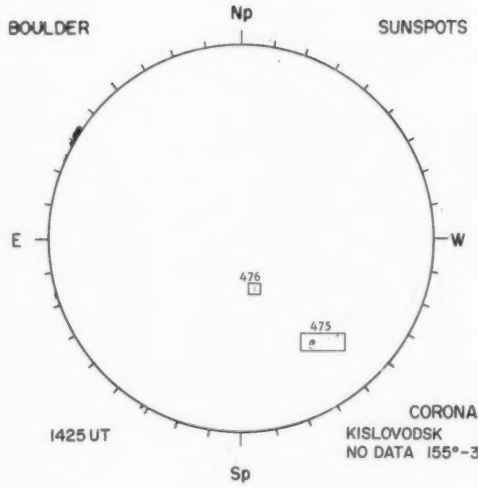
18

RAMEY AFB



1256 UT

Hα BOULDER



1425 UT

SUNSPOTS

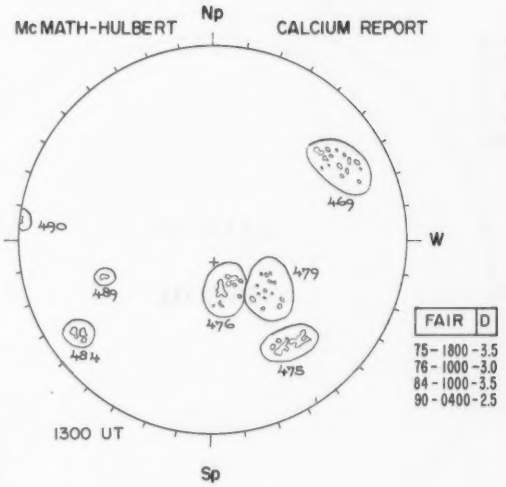
CORONA

KISLOVODSK

NO DATA 155°-355°

McMATH-HULBERT

CALCIUM REPORT



1300 UT

FAIR D

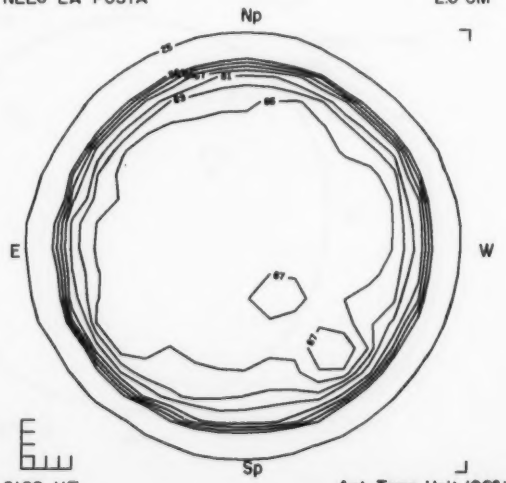
75 - 1800 - 3.5

76 - 1000 - 3.0

84 - 1000 - 3.5

90 - 0400 - 2.5

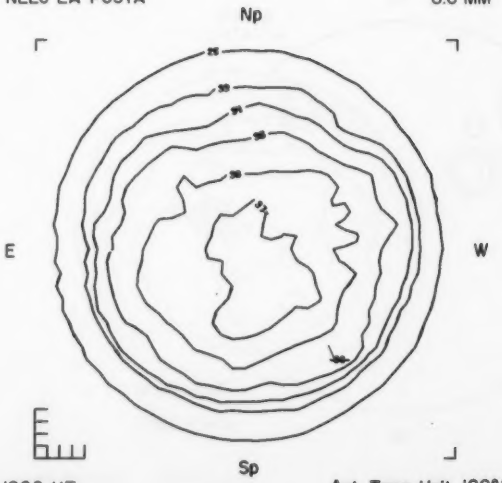
NELC LA POSTA 2.0 CM



2109 UT

Ant. Temp. Unit 100°K

NELC LA POSTA 8.6 MM



1906 UT

Ant. Temp. Unit 100°K

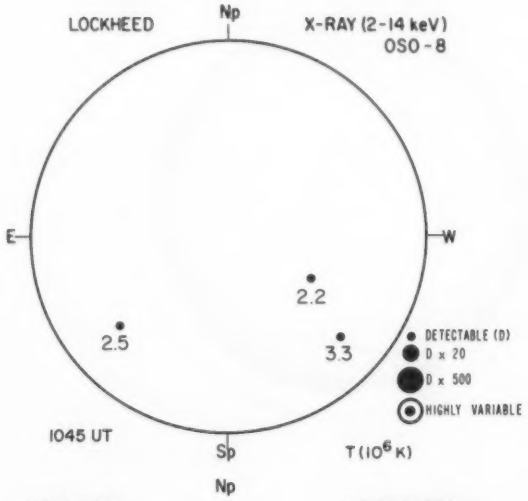
61

Oct 76

OCTOBER 19, 1976 (P =26.04, B_0 =5.52, L_0 =253.21)

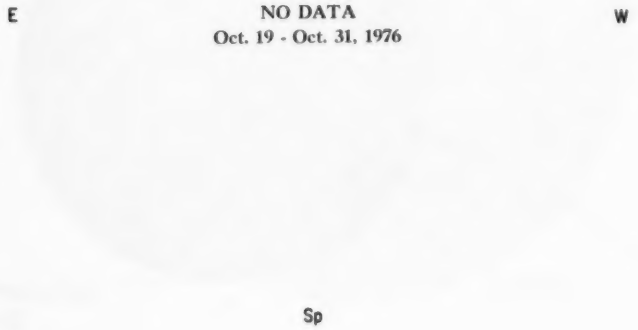
LOCKHEED

X-RAY (2-14 keV)
OSO - 8



KITT PEAK

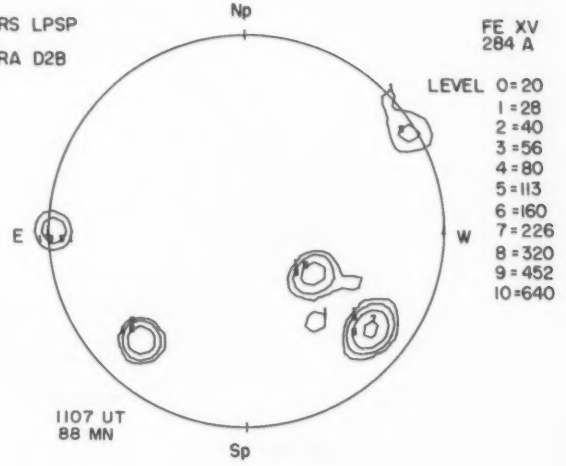
MAGNETOGRAM
Bright - Plus
Dark - Minus



NO DATA
Oct. 19 - Oct. 31, 1976

CNRS LPSP
AURA D2B

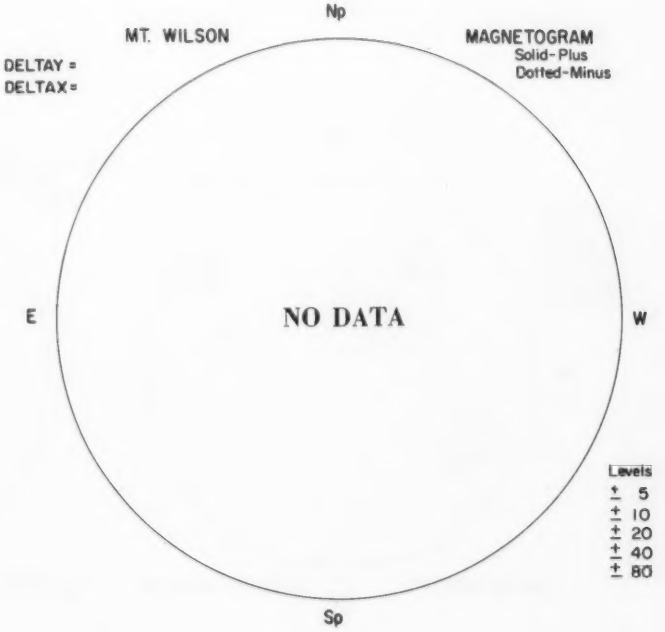
FE XV
284 A



MT. WILSON

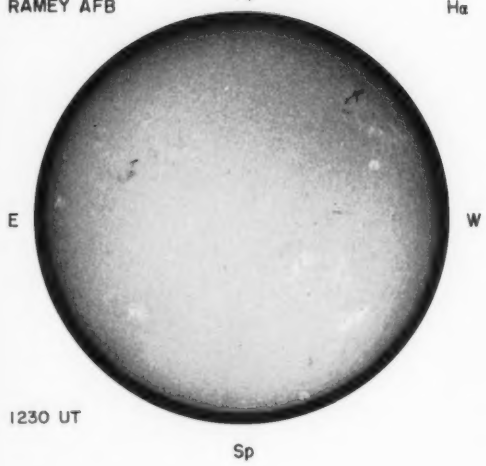
MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =



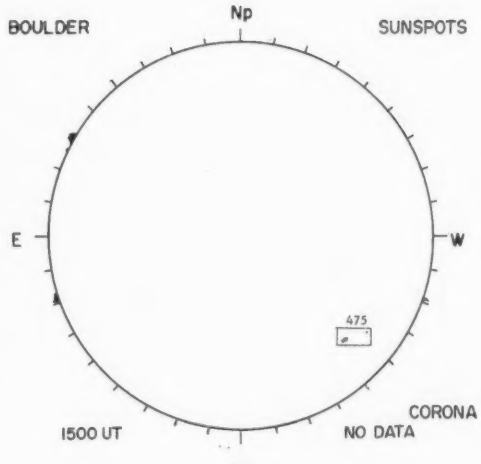
19

RAMEY AFB



1230 UT

Hα BOULDER



1500 UT

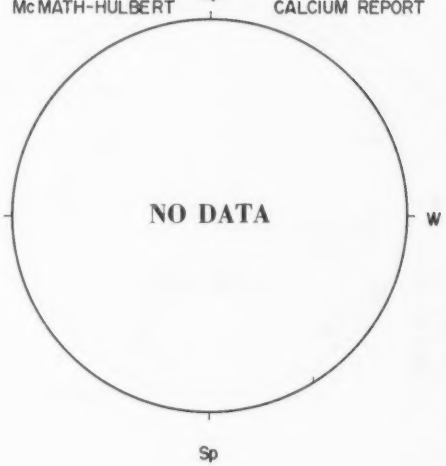
SUNSPOTS

CORONA

NO DATA

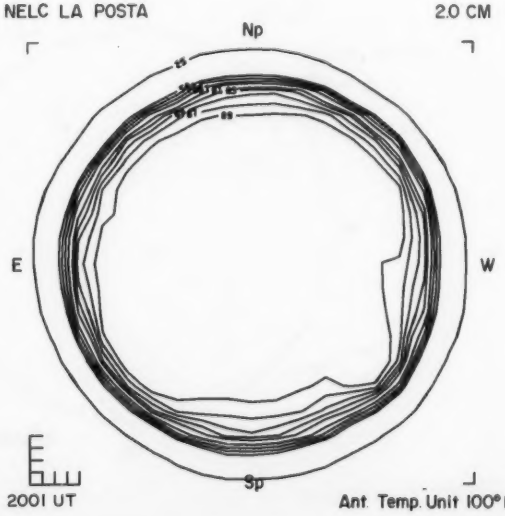
McMATH-HULBERT

CALCIUM REPORT



NELC LA POSTA

2.0 CM

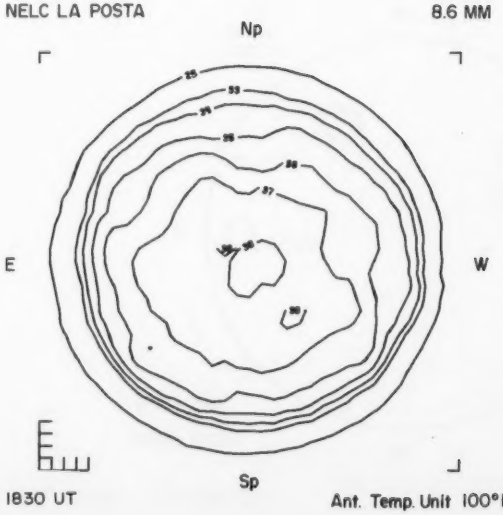


2001 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM



1830 UT

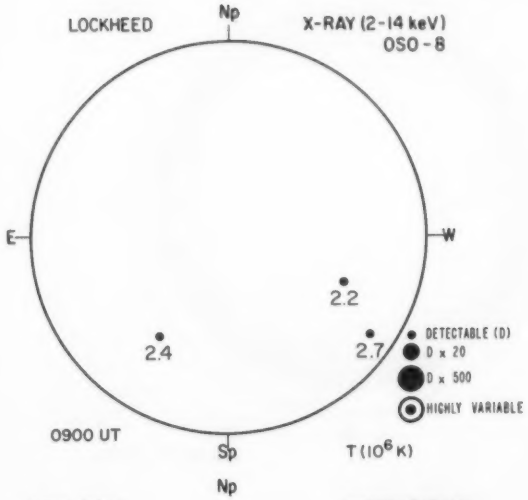
Ant. Temp. Unit 100°K

63
Oct 76

OCTOBER 20, 1976 (P =2597, B_o =5.44, L_o =240.02)

LOCKHEED

X-RAY (2-14 keV)
OSO-8

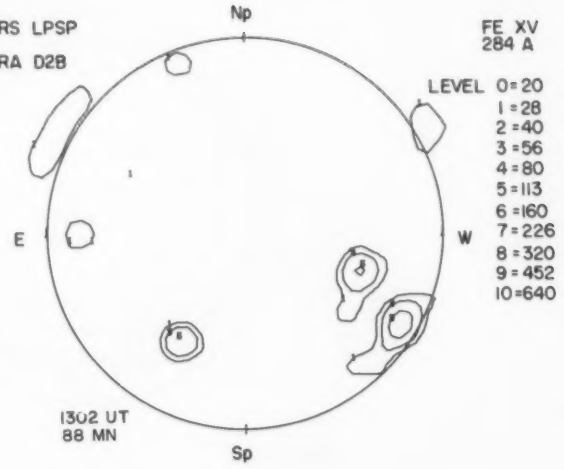


KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

CNRS LPSP
AURA D2B

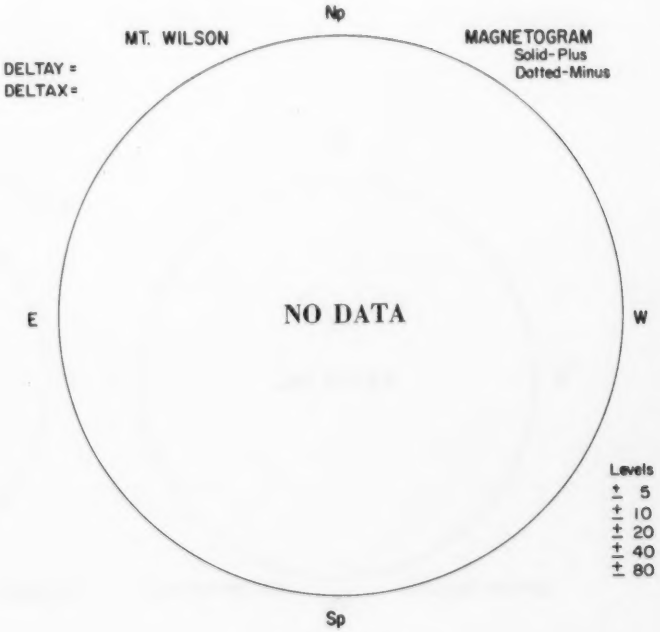
FE XV
284 A



MT. WILSON

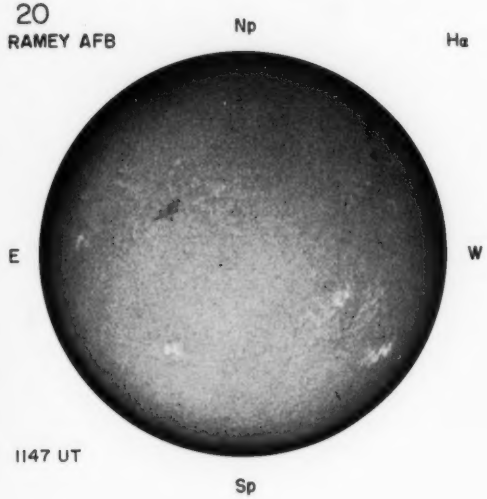
MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =



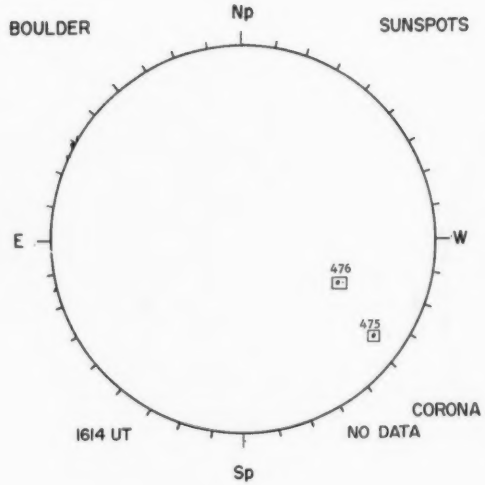
20

RAMEY AFB



1147 UT

Hα BOULDER



1614 UT

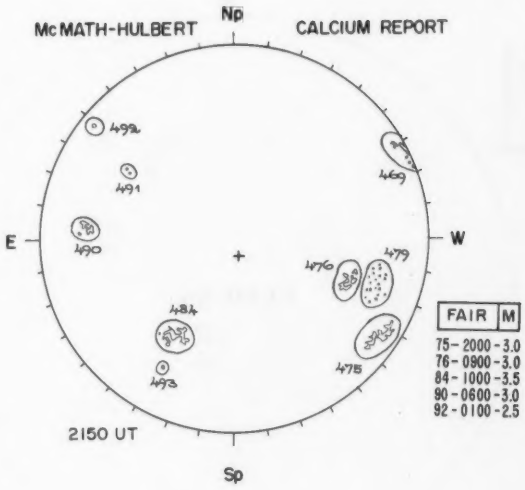
SUNSPOTS

CORONA

NO DATA

McMATH-HULBERT

CALCIUM REPORT

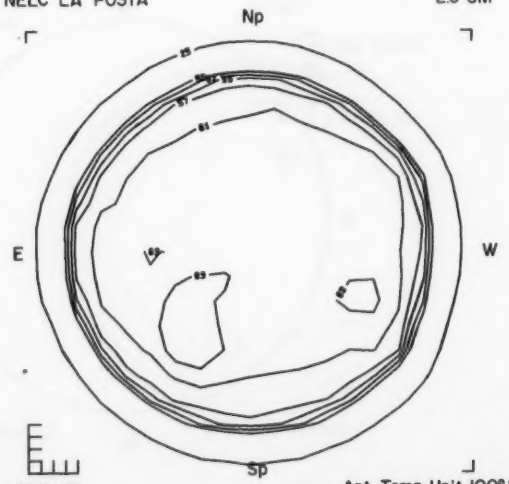


2150 UT

FAIR	M
75 - 2000 - 3.0	
76 - 0900 - 3.0	
84 - 1000 - 3.5	
90 - 0600 - 3.0	
92 - 0100 - 2.5	

NELC LA POSTA

2.0 CM



1838 UT

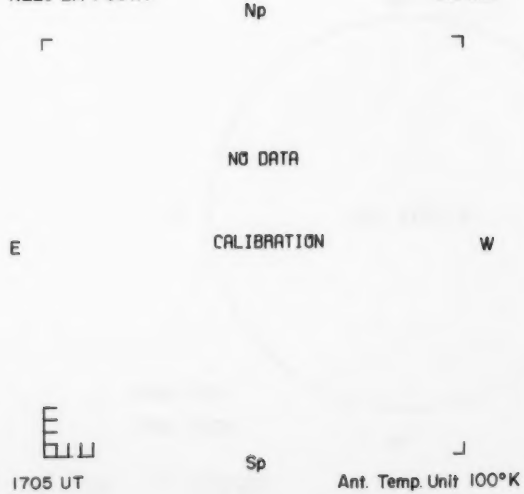
Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM

NO DATA

CALIBRATION



1705 UT

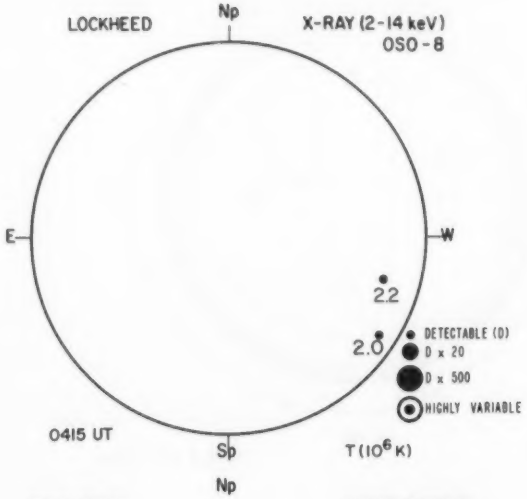
Ant. Temp. Unit 100°K

65
Oct 76

OCTOBER 21, 1976 (P =25.89, B_o =5.36, L_o =226.83)

LOCKHEED

X-RAY (2-14 keV)
OSO-8



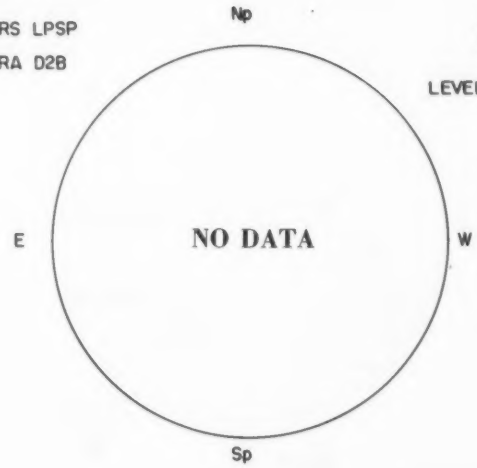
KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

CNRS LPSP
AURA D2B

FE XV
284 A

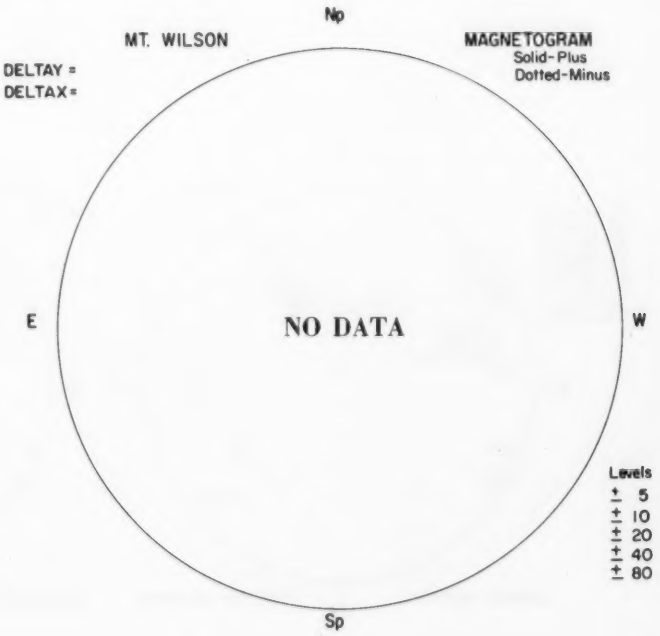
LEVEL 0=20
1=28
2=40
3=56
4=80
5=113
6=160
7=226
8=320
9=452
10=640



MT. WILSON

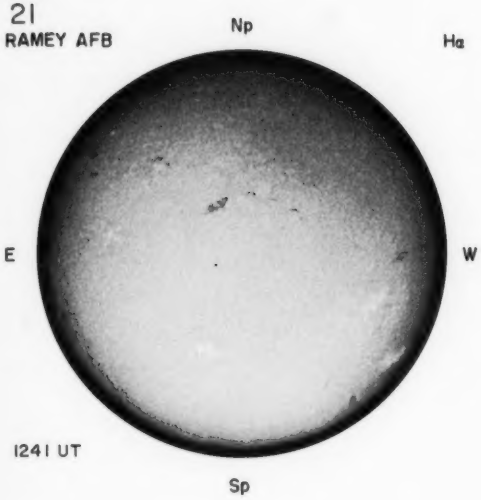
MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =



21

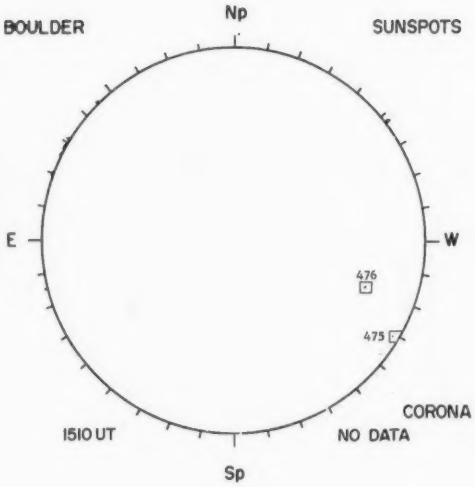
RAMEY AFB



1241 UT

Hα

BOULDER



1510 UT

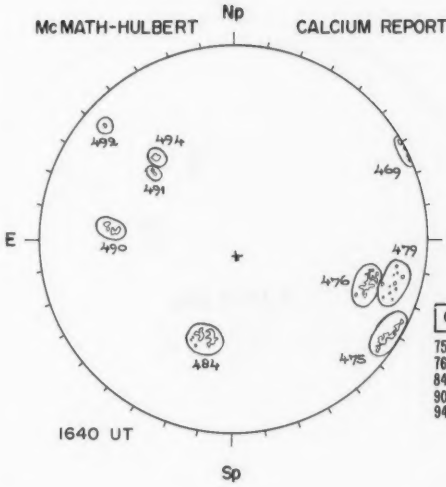
SUNSPOTS

CORONA

NO DATA

McMATH-HULBERT

CALCIUM REPORT

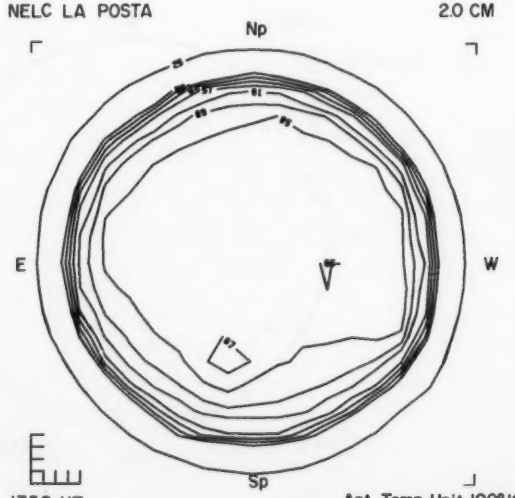


1640 UT

GOOD	M
75 - 2000 - 3.0	
76 - 0800 - 3.0	
84 - 0800 - 3.5	
90 - 0400 - 3.0	
94 - 0300 - 2.5	

NELC LA POSTA

2.0 CM



1758 UT

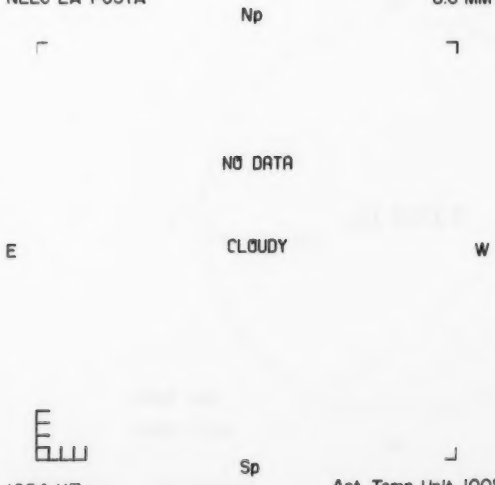
Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM

NO DATA

CLOUDY



1854 UT

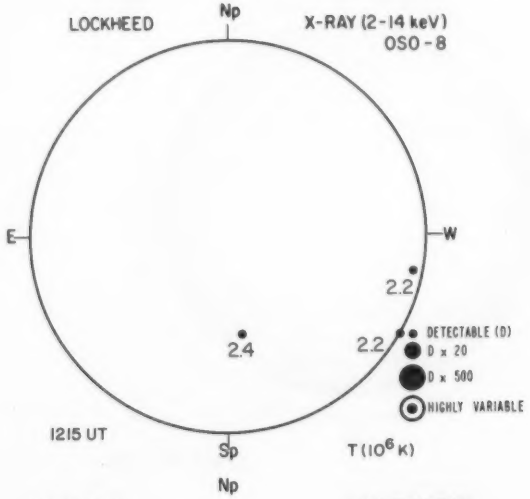
Ant. Temp. Unit 100°K

67
Oct 76

OCTOBER 22, 1976 (P = 25.80, B_o = 5.27, L_o = 213.64)

LOCKHEED

X-RAY (2-14 keV)
OSO-8

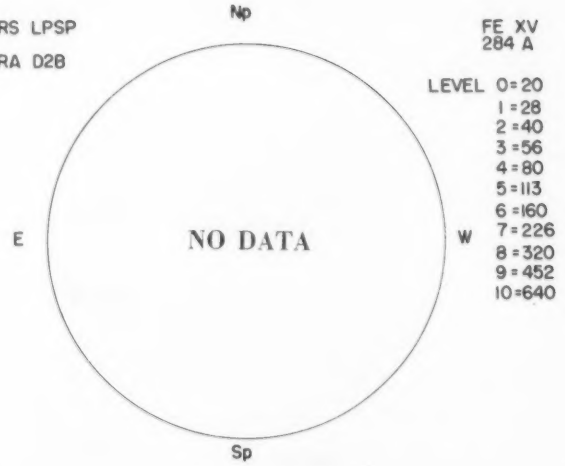


KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

CNRS LPSP
AURA D28

FE XV
284 A

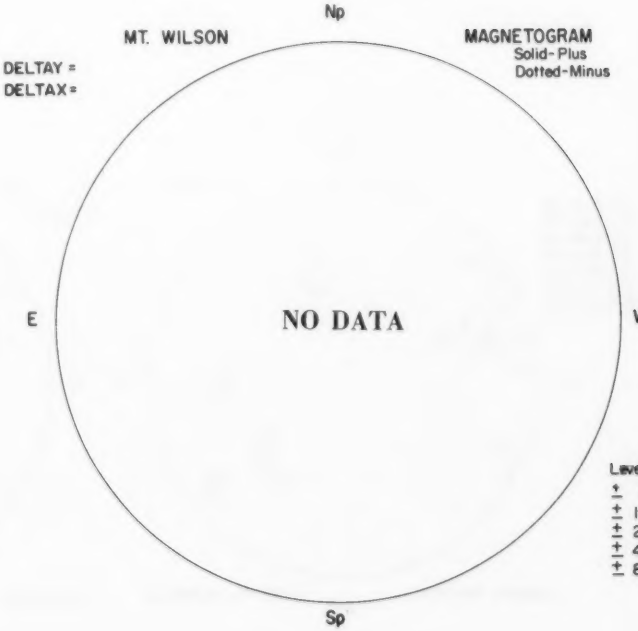


LEVEL 0 = 20
1 = 28
2 = 40
3 = 56
4 = 80
5 = 113
6 = 160
7 = 226
8 = 320
9 = 452
10 = 640

MT. WILSON

MAGNETOGRAM
Solid - Plus
Dotted - Minus

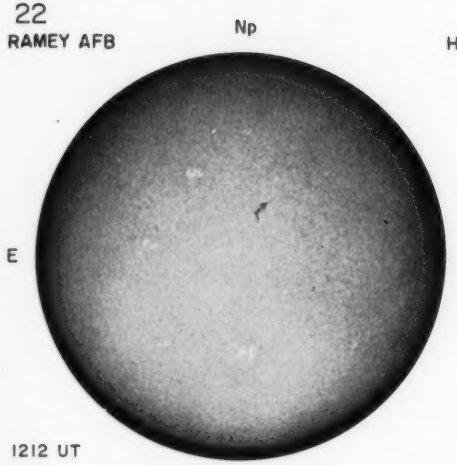
DELTAY =
DELTAX =



Levels
± 5
± 10
± 20
± 40
± 80

22

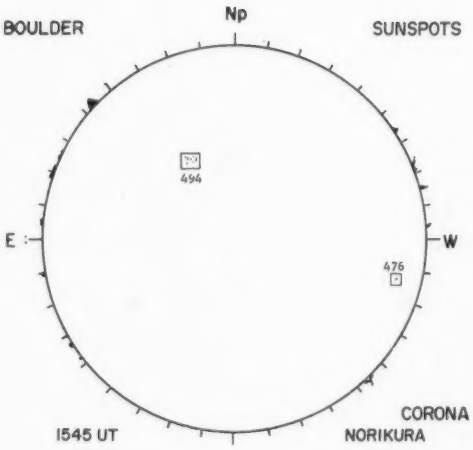
RAMEY AFB



1212 UT

Hα

BOULDER



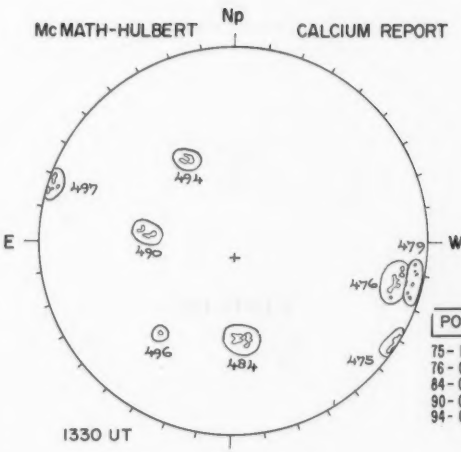
1545 UT

SUNSPOTS

CORONA

NORIKURA

McMATH-HULBERT



1330 UT

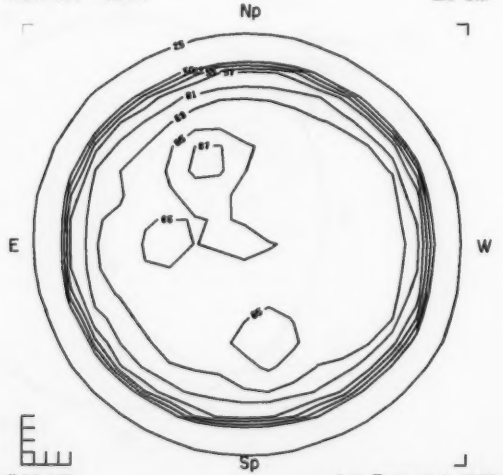
CALCIUM REPORT

POOR	M

75 - 1700 - 2.5
76 - 0700 - 2.5
84 - 0800 - 3.0
90 - 0400 - 3.0
94 - 0400 - 3.0

NELC LA POSTA

2.0 CM



1742 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM

NO DATA

CALIBRATION

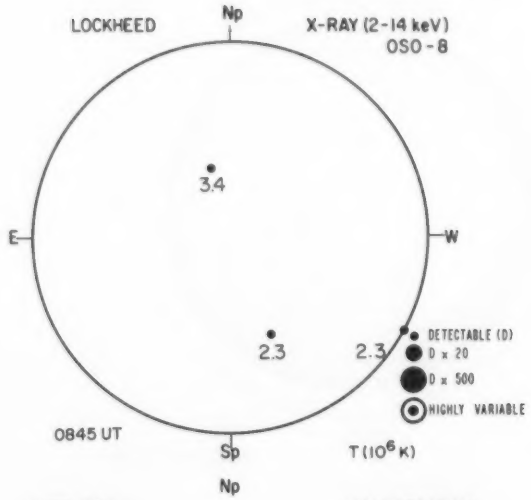
1835 UT

Ant. Temp. Unit 100°K

69

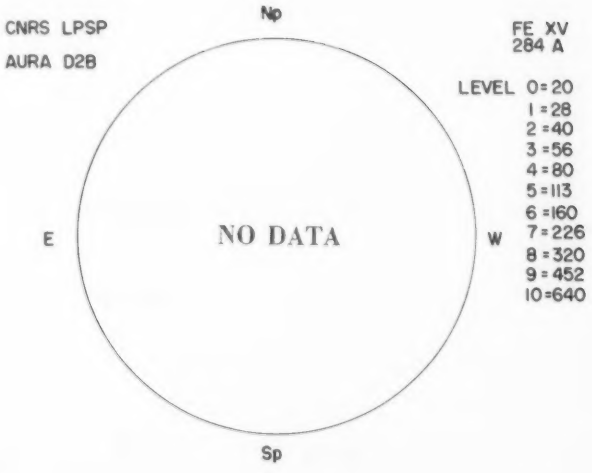
Oct 76

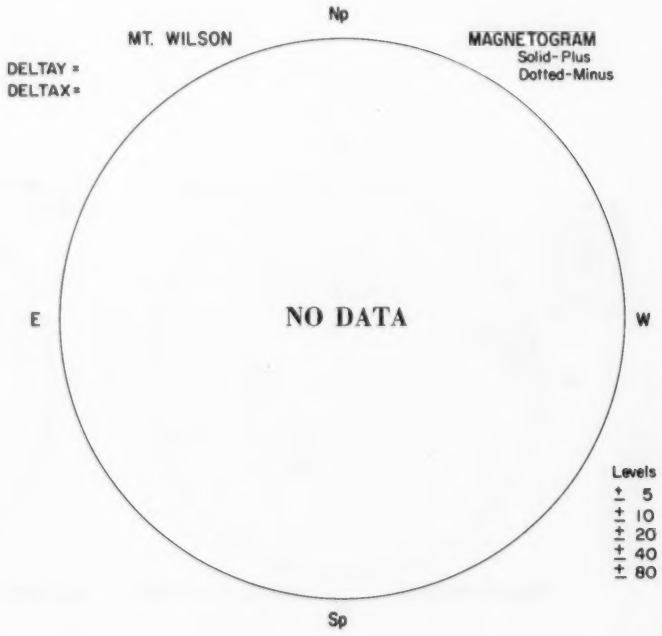
OCTOBER 23, 1976 (P = 25.71, B_o = 5.18, L_o = 200.45)



KITT PEAK

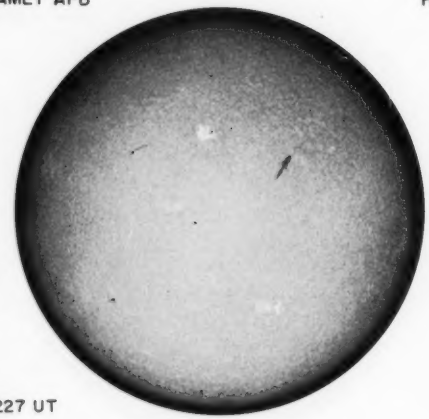
MAGNETOGRAM
Bright - Plus
Dark - Minus





23

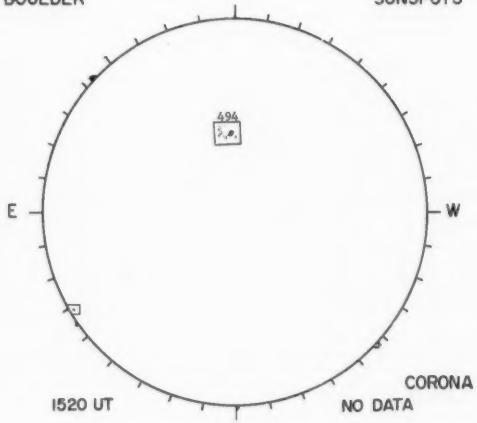
RAMEY AFB



Hα

1227 UT

BOULDER



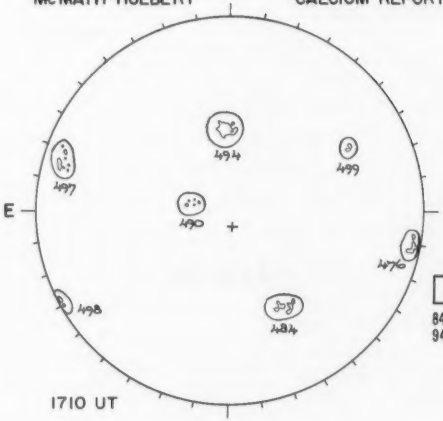
SUNSPOTS

1520 UT

CORONA

NO DATA

McMATH-HULBERT



CALCIUM REPORT

FAIR | M

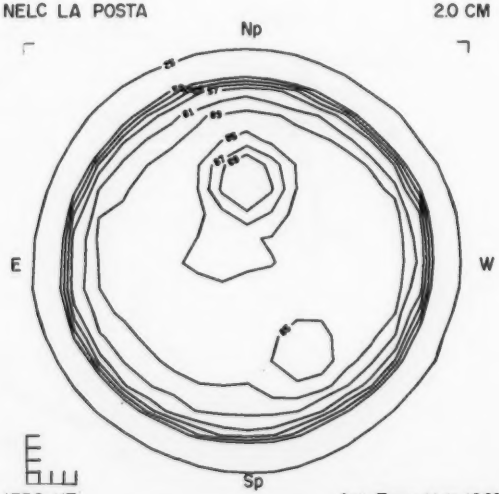
84 - 0700 - 3.0

94 - 1000 - 4.0

1710 UT

NELC LA POSTA

2.0 CM



1752 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM

NO DATA

CLOUDY

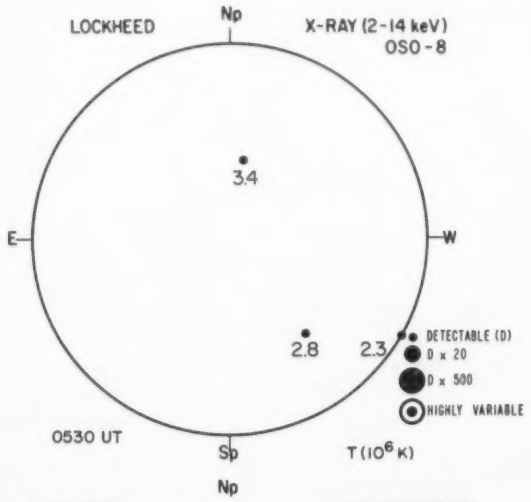
1845 UT

Ant. Temp. Unit 100°K

71

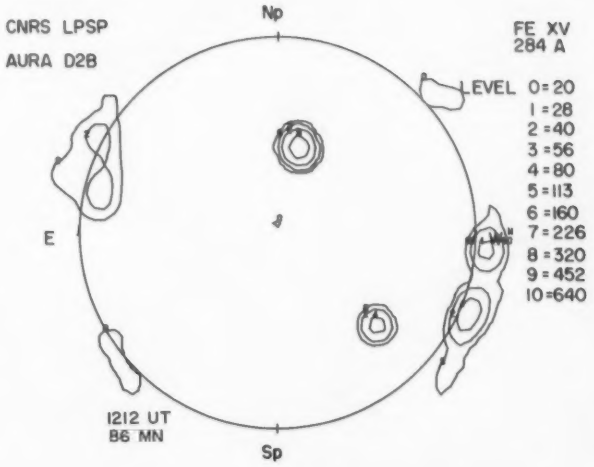
Oct 76

OCTOBER 24, 1976 (P = 25.61, B_0 = 5.10, L_0 = 187.26)



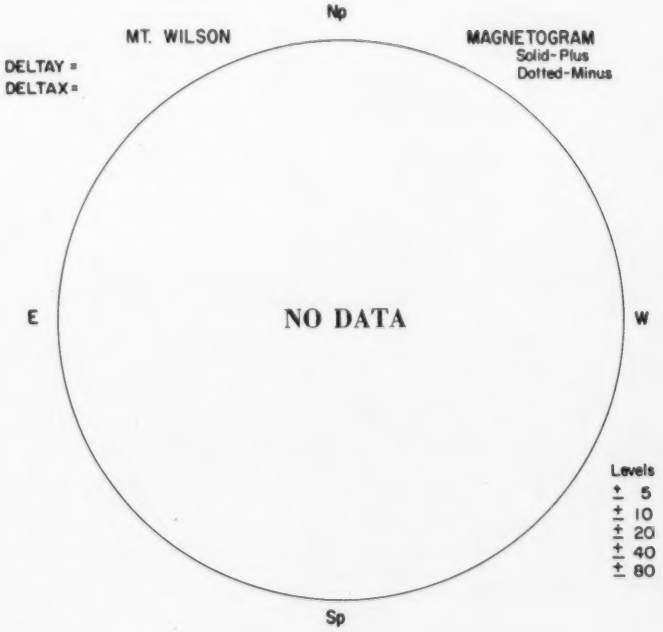
KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

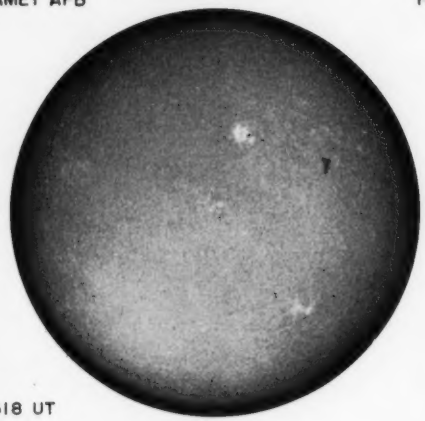


MT. WILSON

MAGNETOGRAM
Solid - Plus
Dotted - Minus

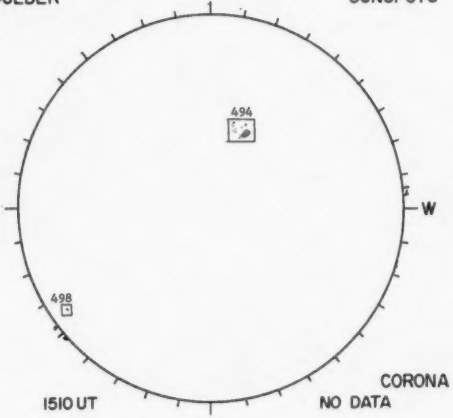


RAMEY AFB



1318 UT

Hα BOULDER



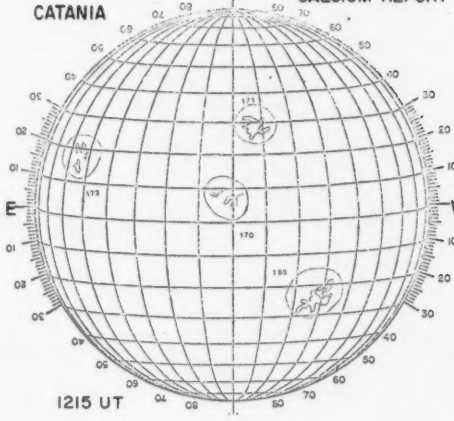
1510 UT

SUNSPOTS

CORONA

NO DATA

CATANIA CALCIUM REPORT

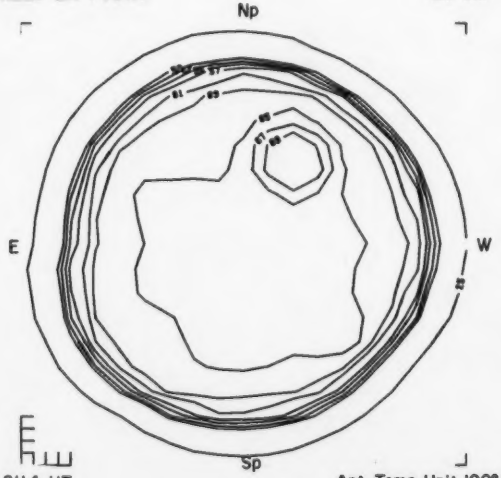


1215 UT

GOOD SS

169-1753- --
171-1054- --
172-0744- --

NELC LA POSTA 2.0 CM



2114 UT

Ant. Temp. Unit 100°K

NELC LA POSTA 8.6 MM

NO DATA

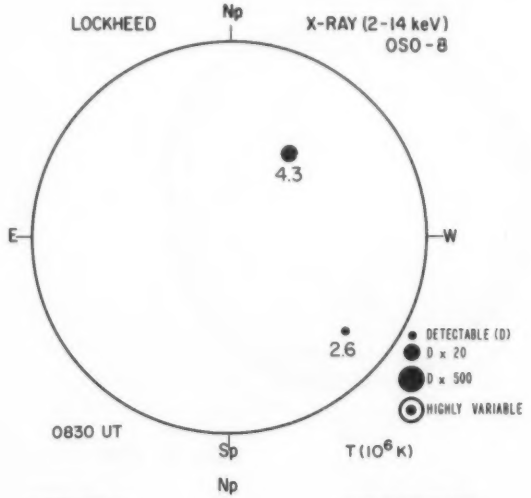
CALIBRATION

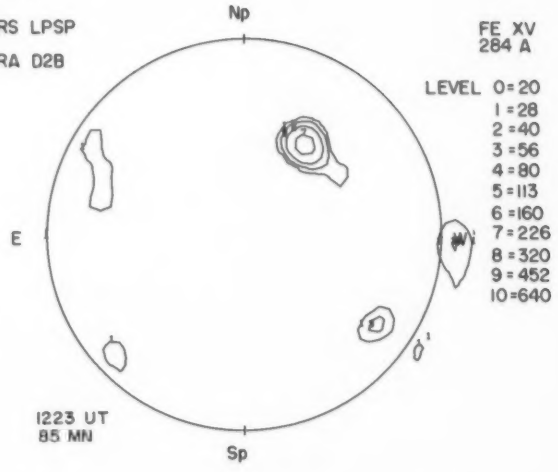
1932 UT

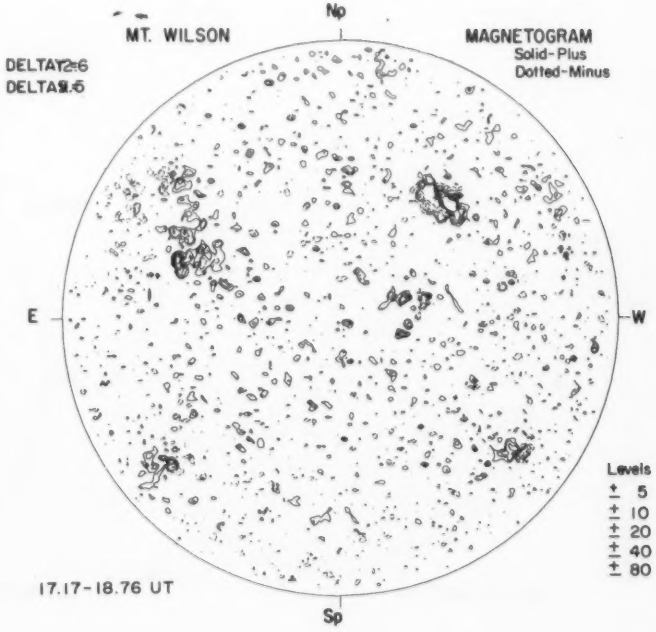
Ant. Temp. Unit 100°K

Oct 76 73

OCTOBER 25, 1976 (P=25.50, B_o=5.01, L_o=174.08)

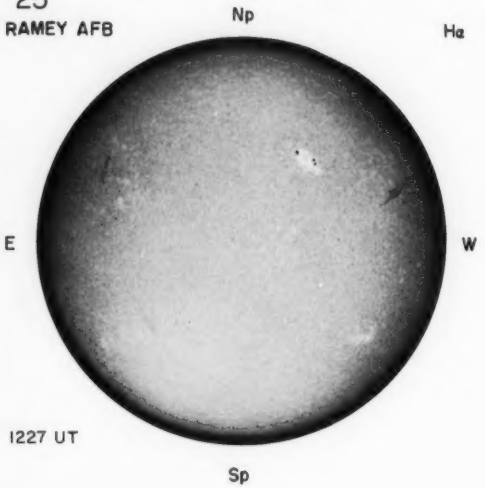






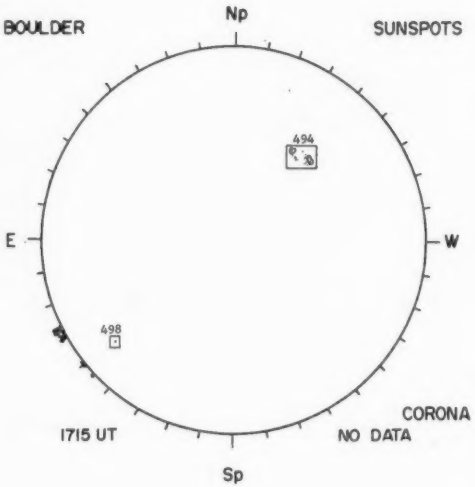
25

RAMEY AFB



1227 UT

Hα BOULDER



1715 UT

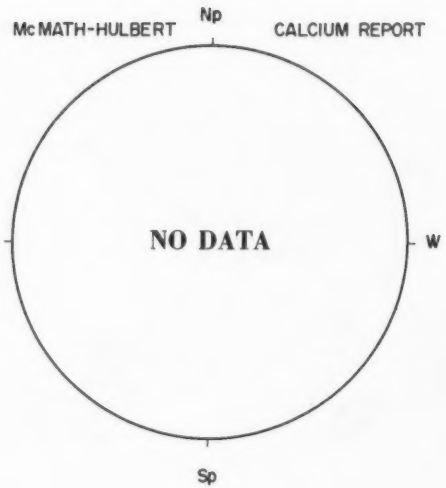
SUNSPOTS

CORONA

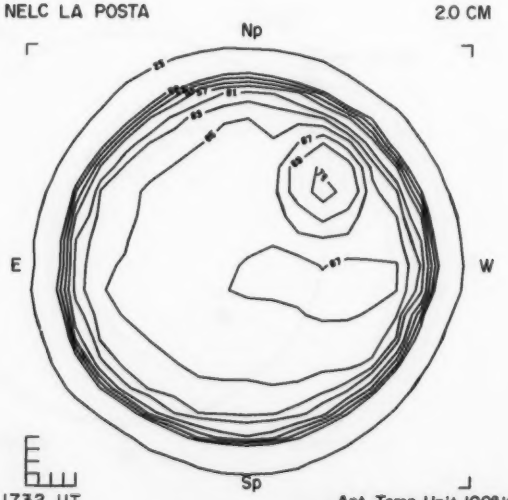
NO DATA

McMATH-HULBERT

CALCIUM REPORT



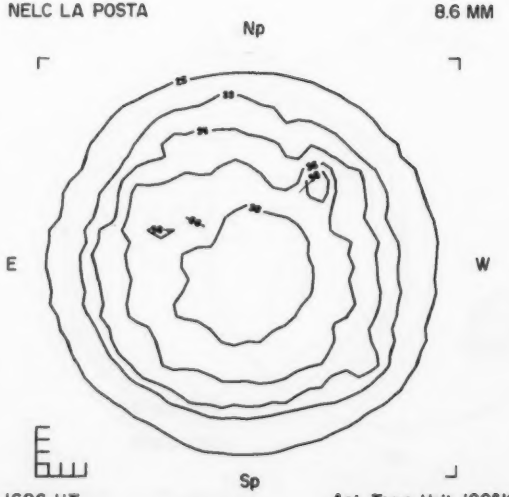
NELC LA POSTA 2.0 CM



1732 UT

Ant. Temp. Unit 100°K

NELC LA POSTA 8.6 MM



1606 UT

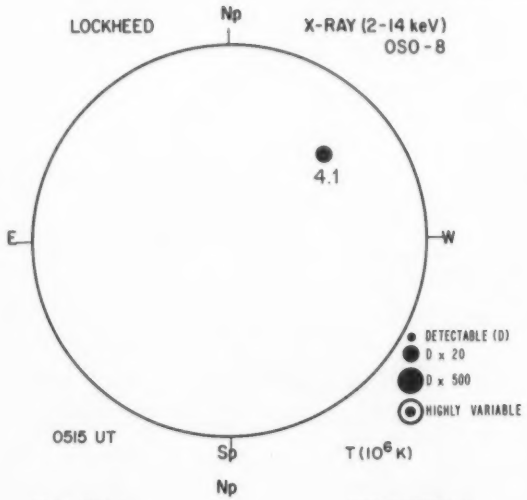
Ant. Temp. Unit 100°K

75
Oct 76

OCTOBER 26, 1976 (P = 25.38, B_0 = 4.91, L_0 = 160.89)

LOCKHEED

X-RAY (2-14 keV)
OSO-8



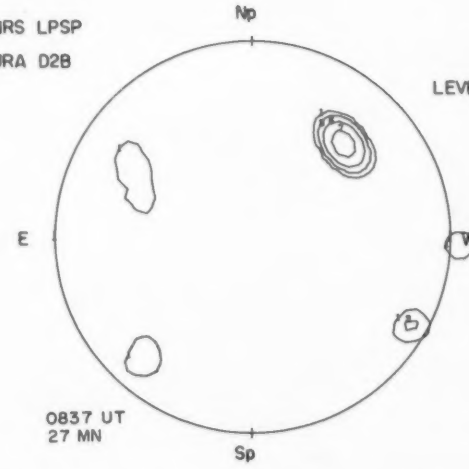
KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

CNRS LPSP
AURA D2B

FE XV
284 A

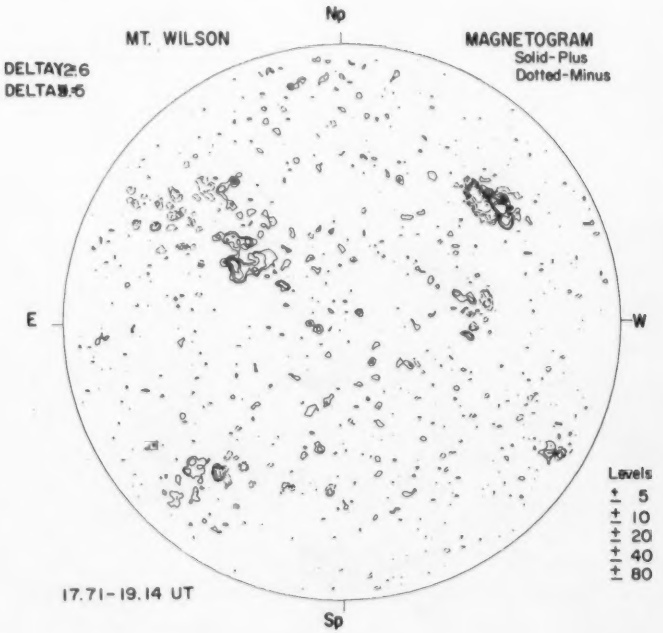
LEVEL 0 = 20
1 = 28
2 = 40
3 = 56
4 = 80
5 = 113
6 = 160
7 = 226
8 = 320
9 = 452
10 = 640



MT. WILSON

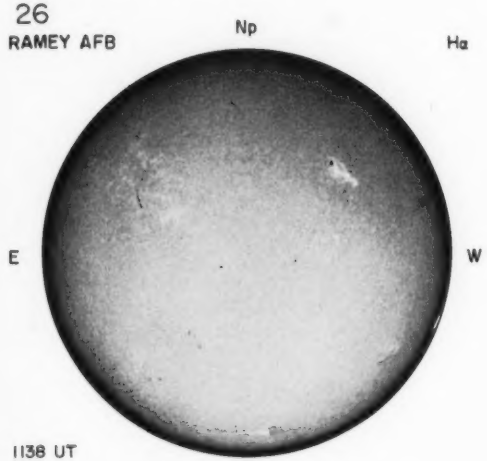
DELTAY≥6
DELTA≥6

MAGNETOGRAM
Solid - Plus
Dotted - Minus



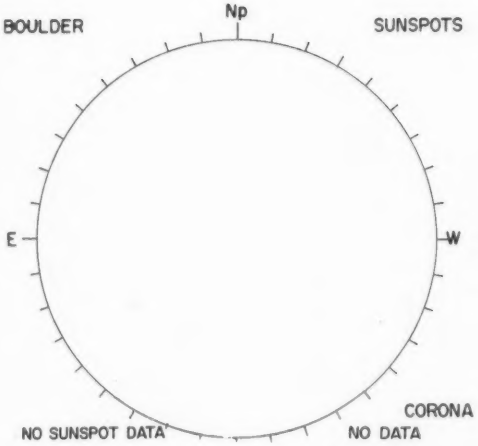
26

RAMEY AFB Hα



1138 UT

BOULDER SUNSPOTS

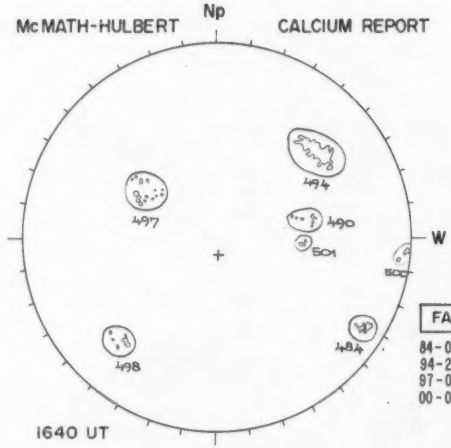


NO SUNSPOT DATA

CORONA

NO DATA

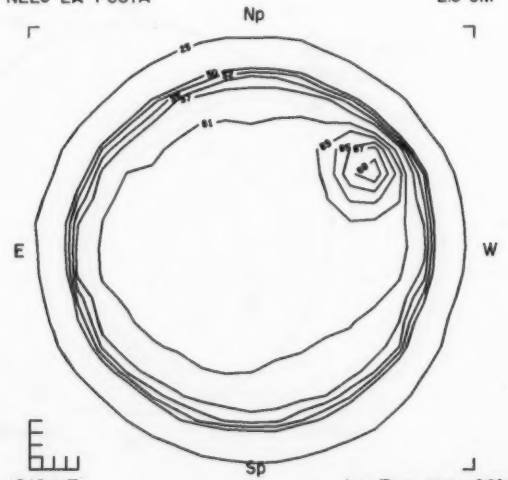
McMATH-HULBERT CALCIUM REPORT



1640 UT

FAIR	M
84 - 0700 - 2.5	
94 - 2600 - 3.5	
97 - 0500 - 2.5	
00 - 0600 - 2.5	

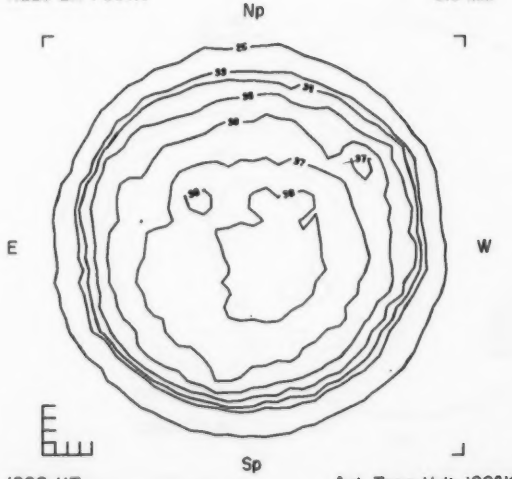
NELC LA POSTA 2.0 CM



1819 UT

Ant. Temp. Unit 100°K

NELC LA POSTA 8.6 MM



1908 UT

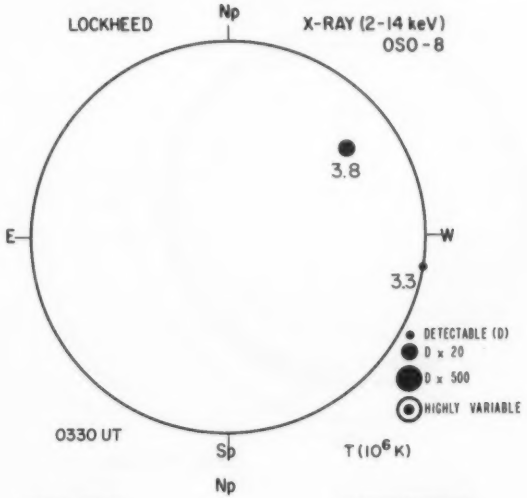
Ant. Temp. Unit 100°K

77
Oct 76

OCTOBER 27, 1976 (P = 25.26, B_o = 4.82, L_o = 147.70)

LOCKHEED

X-RAY (2-14 keV)
OSO-8

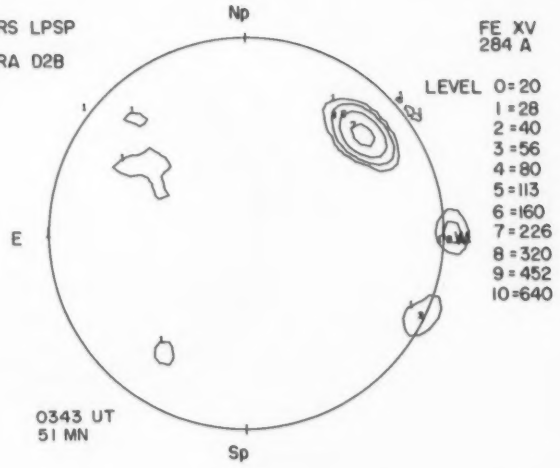


KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

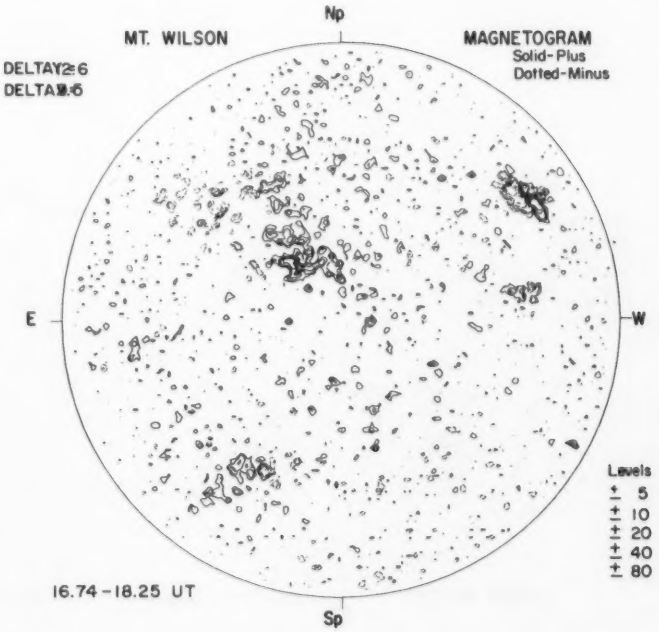
CNRS LPSP
AURA D2B

FE XV
284 A



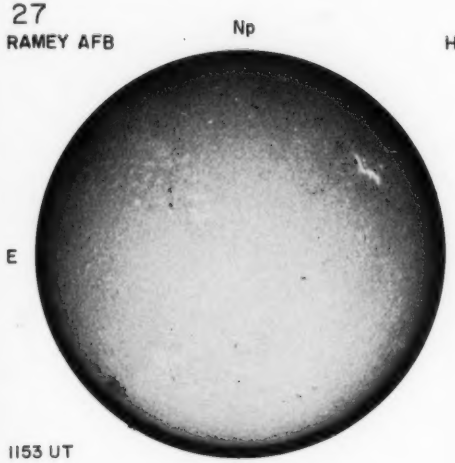
MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus



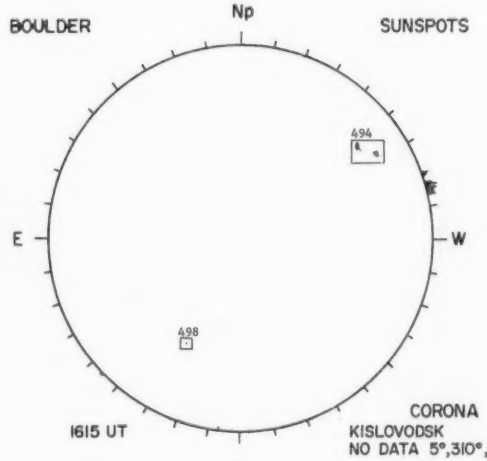
27

RAMEY AFB



1153 UT

Hα BOULDER



1615 UT

SUNSPOTS

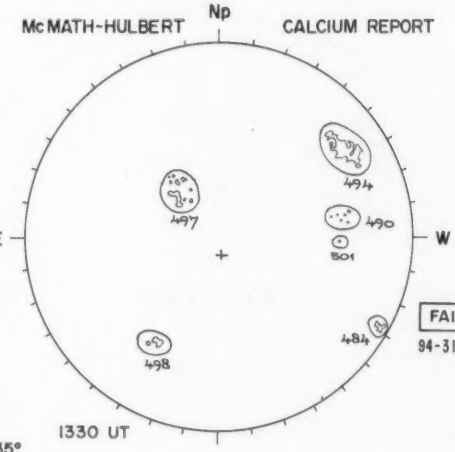
CORONA

KISLOVODSK

NO DATA 5°,310°,335°

McMATH-HULBERT

CALCIUM REPORT



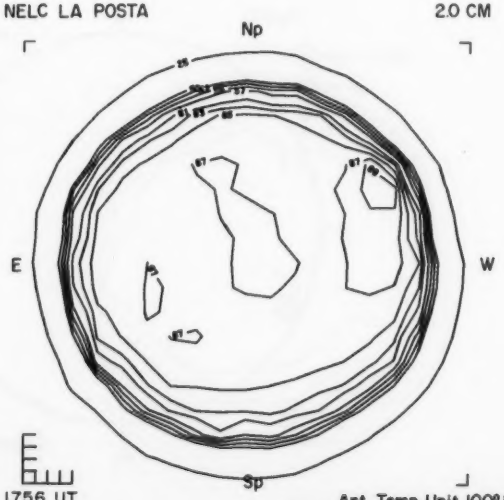
1330 UT

FAIR | M

94-3100 - 3.5

NELC LA POSTA

2.0 CM

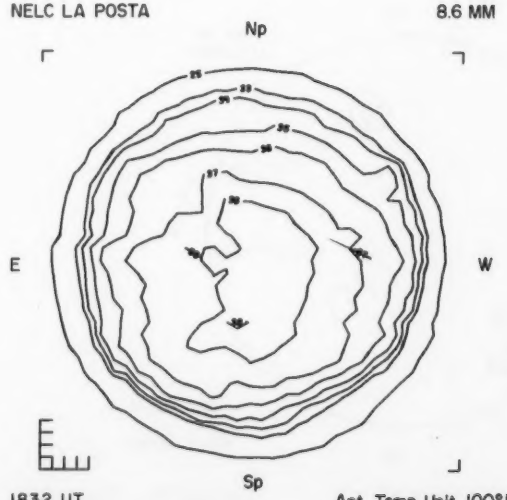


1756 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM

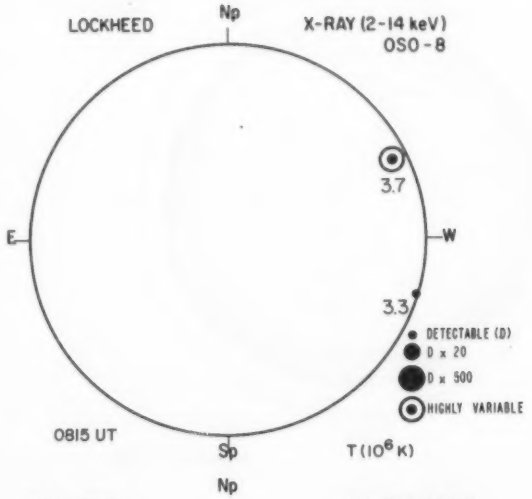


1832 UT

Ant. Temp. Unit 100°K

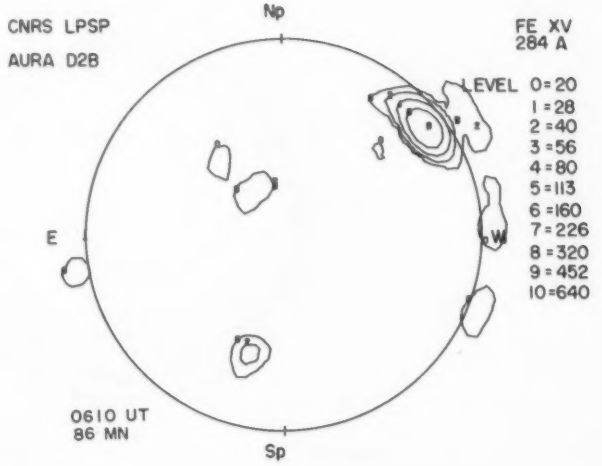
79 Oct 76

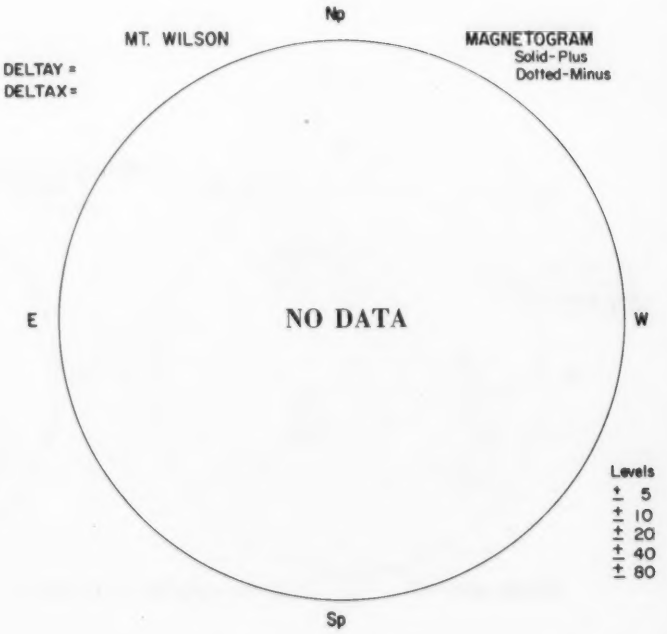
OCTOBER 28, 1976 (P = 25.12, B_0 = 4.72, L_0 = 134.51)



KITT PEAK

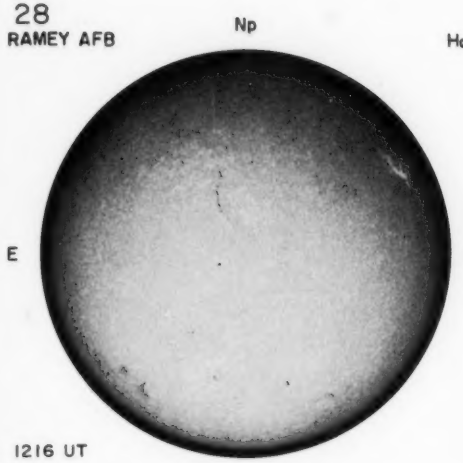
MAGNETOGRAM
Bright - Plus
Dark - Minus





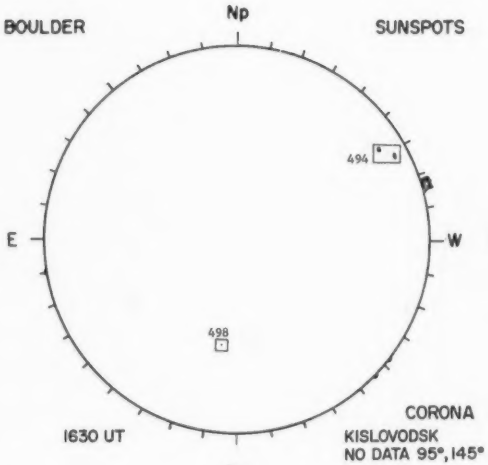
28

RAMEY AFB



1216 UT

Hα BOULDER



1630 UT

SUNSPOTS

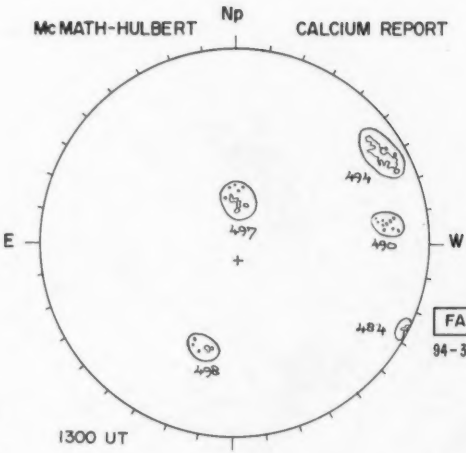
CORONA

KISLOVODSK

NO DATA 95°, 145°

McMATH-HULBERT

CALCIUM REPORT



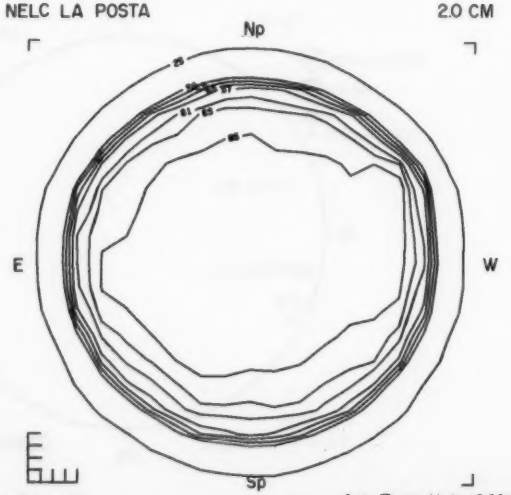
1300 UT

FAIR | S

94-3000-3.5

NELC LA POSTA

2.0 CM



1744 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

8.6 MM

NO DATA

CALIBRATION

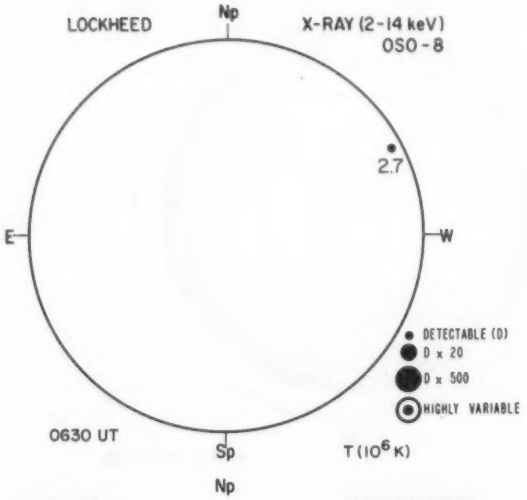
1827 UT

Ant. Temp. Unit 100°K

81
Oct 76

OCTOBER 29, 1976 (P=24.98, B_o=4.63, L_o=121.33)

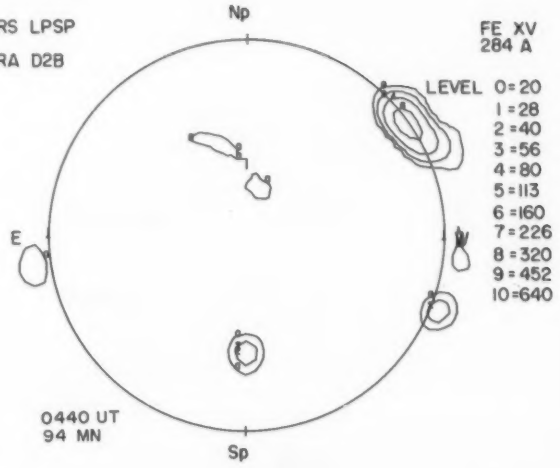
LOCKHEED
X-RAY (2-14 keV)
OSO-8



KITT PEAK

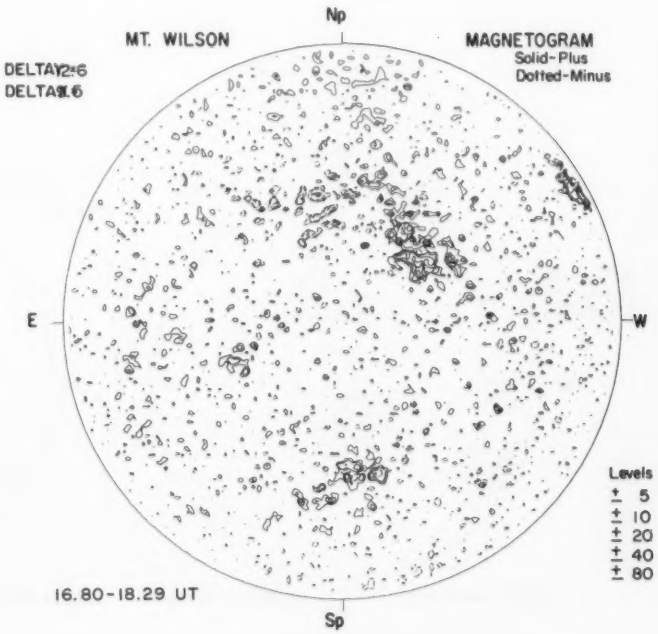
MAGNETOGRAM
Bright - Plus
Dark - Minus

CNRS LPSP
AURA D2B
FE XV
284 A



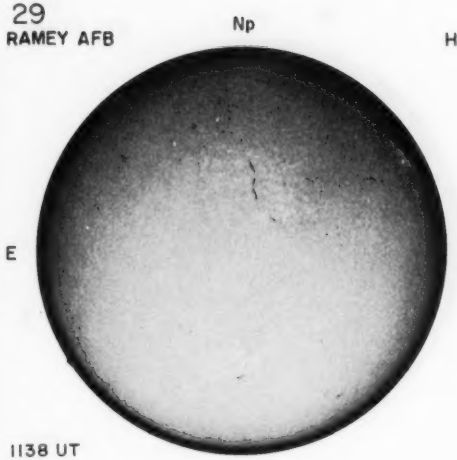
MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus



29

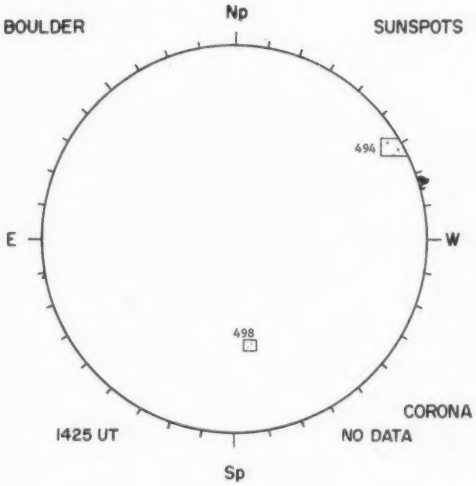
RAMEY AFB



1138 UT

Hα

BOULDER



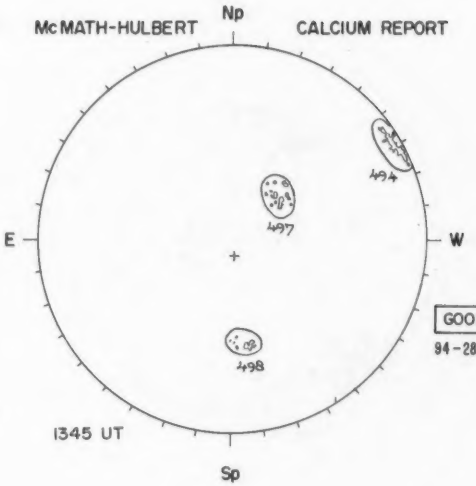
1425 UT

SUNSPOTS

CORONA

NO DATA

McMATH-HULBERT



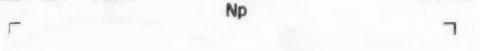
1345 UT

CALCIUM REPORT

GOOD	M

94-2800-3.0

NELC LA POSTA



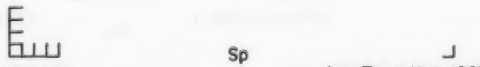
2.0 CM

NO DATA

E

CALIBRATION

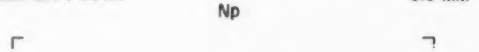
W



2002 UT

Ant. Temp. Unit 100°K

NELC LA POSTA



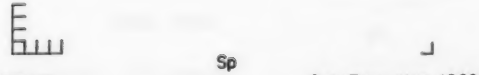
8.6 MM

NO DATA

E

CALIBRATION

W

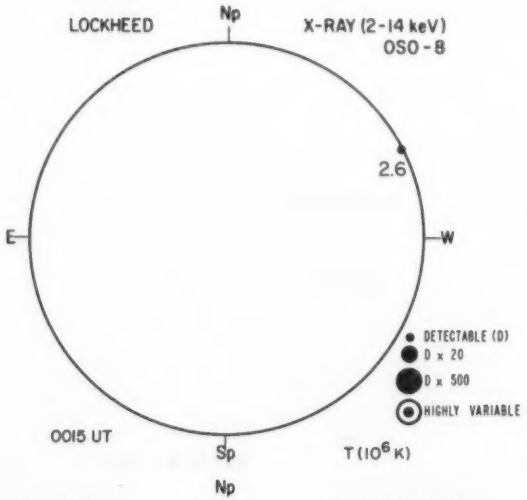


2105 UT

Ant. Temp. Unit 100°K

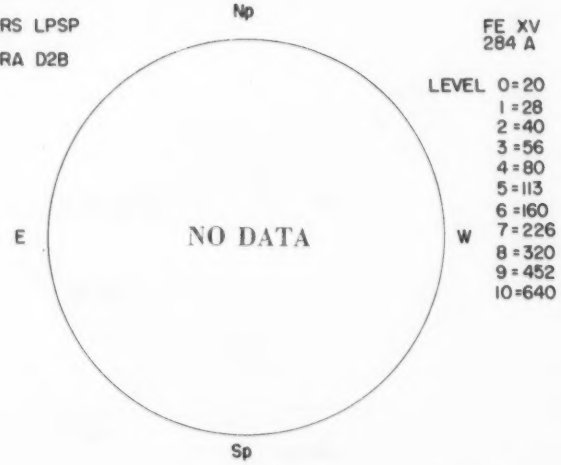
83
Oct 76

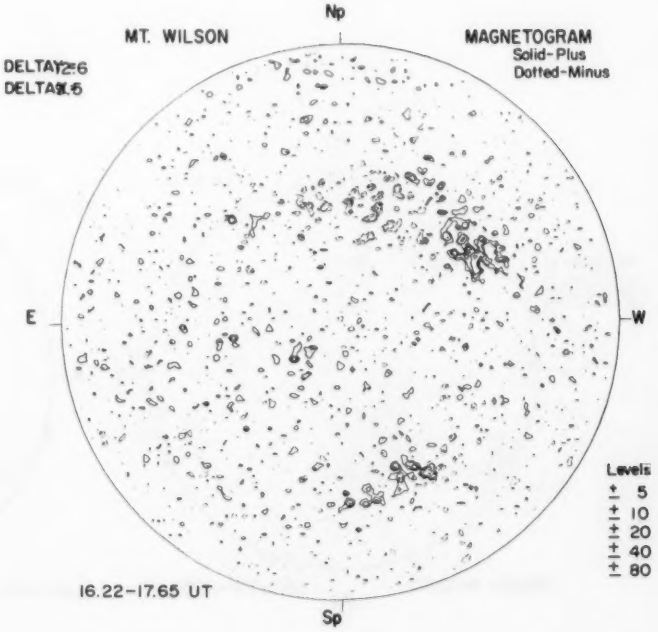
OCTOBER 30, 1976 (P = 24.84, B_0 = 4.53, L_0 = 108.14)



KITT PEAK

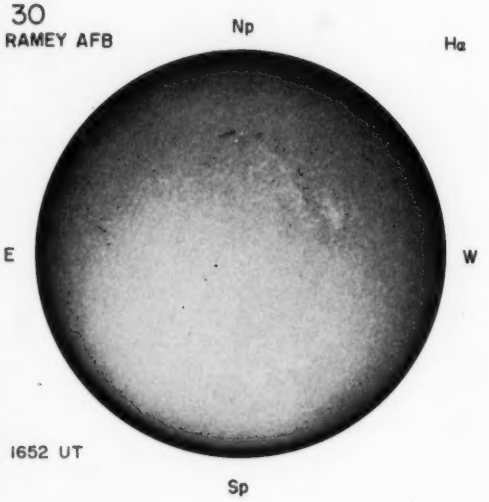
MAGNETOGRAM
Bright - Plus
Dark - Minus





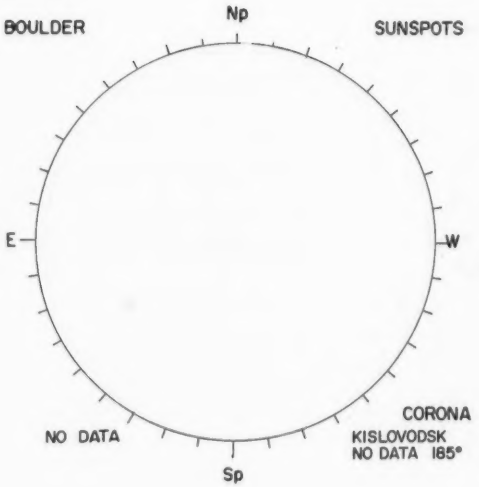
30

RAMEY AFB



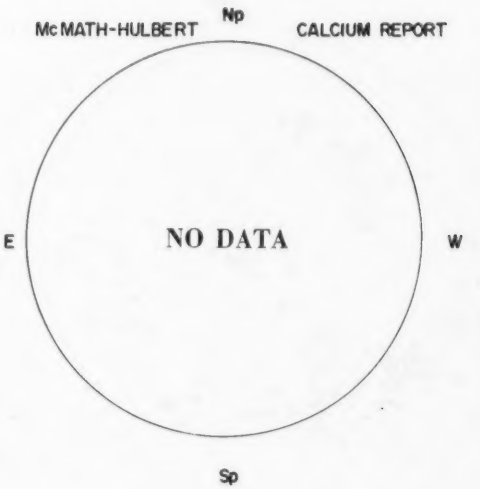
Hα

BOULDER



SUNSPOTS

McMATH-HULBERT



CALCIUM REPORT

NELC LA POSTA

2.0 CM

NELC LA POSTA

8.6 MM

85
Oct 76

OCTOBER 31, 1976 (P = 24.68, B_0 = 4.43, L_0 = 94.95)

LOCKHEED

Np

X-RAY (2-14 keV)
OSO-8

2.7

E

W

DETECTABLE (D)
D x 20
D x 500
HIGHLY VARIABLE

0615 UT

Sp

T (10^6 K)

Np

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

Sp

CNRS LPSP
AURA D2B

Np

FE XV
284 A

LEVEL 0 = 20
1 = 28
2 = 40
3 = 56
4 = 80
5 = 113
6 = 160
7 = 226
8 = 320
9 = 452
10 = 640

E

NO DATA

W

Sp

Np

MT. WILSON

MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTA ≥ 7
DELTA ≥ 5

E

W

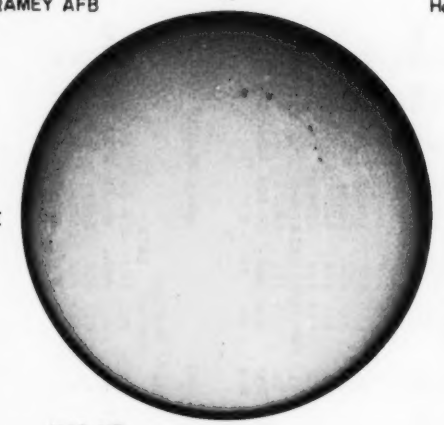
Levels
± 5
± 10
± 20
± 40
± 80

16.33 - 17.76 UT

Sp

31

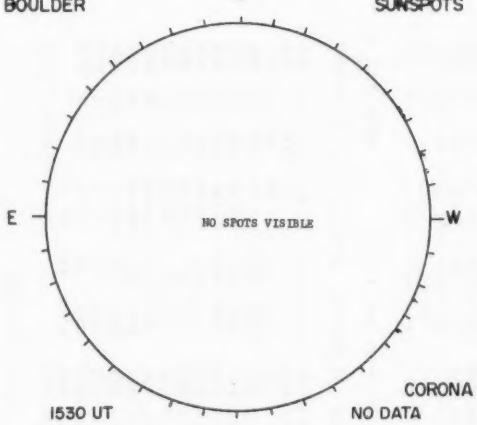
RAMEY AFB



Hα

1142 UT

BOULDER



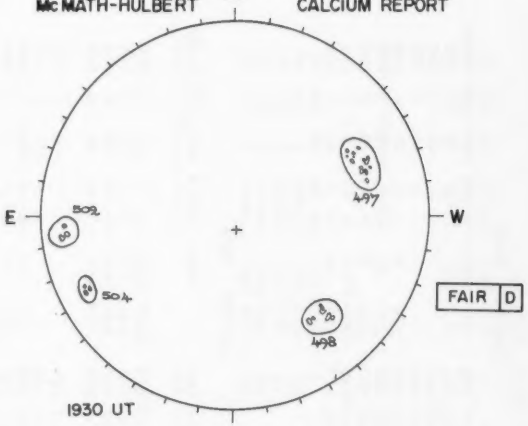
SUNSPOTS

1530 UT

CORONA

NO DATA

McMATH-HULBERT



CALCIUM REPORT

1930 UT

FAIR | D

NELC LA POSTA

Np

2.0 CM

NO DATA

E

CALIBRATION

W

Sp

1726 UT

Ant. Temp. Unit 100°K

NELC LA POSTA

Np

8.6 MM

NO DATA

E

CALIBRATION

W

Sp

1816 UT

Ant. Temp. Unit 100°K

87
Oct 76

REGIONS OF SOLAR ACTIVITY

OCTOBER 1976

MCMATH REGION 14454 CMP DATE 1.0

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	9	30	14454	N34 E66	132	100	3.0		N31 E04				B	10	4	BXO
76	10	1	14454	N34 W07	131	400	3.5		N33 W07				R	40	9	CAO
76	10	2	14454	N34 W21	130	700	3.0		N32 W22				B	30	3	CRI
76	10	3	14454	N34 W32	128	900	3.0	19723	N32 W34	129	B	4	R	30	4	CAO
76	10	4	14454	N34 W46	128	700	2.5	19723	N33 W45	127	AP	4	B	10	1	AXX
76	10	5	14454	N34 W58	128	700	3.0	19723	N32 W55	124	B	3	R	10	2	BXO
76	10	6						19723	N31 W68	124	B	3	R	10	2	BXO
76	10	7	14454	N33 W85	127	800	2.5	19723	N31 W77	119	AF	3	B	10	1	AXX

MCMATH REGION 14447 CMP DATE 1.5

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	9	24	14447	S25 E90	127	400	1.0									
76	9	25	14447	S27 E83	120	1700	3.0									
76	9	26						19722	S26 E63	127	(BP)	3	R	100	2	CSO
76	9	27	14447	S27 E56	124	1500	3.0	19722	S27 E46	130	(BP)	3	R	90	3	CSO
76	9	28	14447	S27 E40	124	1700	3.0	19722	S27 E33	129	(AP)	4	B	60	1	HSX
76	9	29	14447	S27 E27	124	1500	3.0		S27 E19				B	80	1	HSX
76	9	30	14447	S26 E14	124	1400	2.5									
76	10	1	14447	S27 E00	124	1400	3.0		S25 W05				R	70	1	HSX
76	10	2	14447	S27 W13	122	1500	3.0		S27 W20				B	100	1	HSX
76	10	3	14447	S27 W24	120	1400	3.0	19722	S26 W33	126	AP	4	R	80	1	HSX
76	10	4	14447	S27 W40	122	1400	3.0	19722	S25 W46	128	AP	4	B	60	1	HSX
76	10	5	14447	S27 W54	124	1400	2.5	19722	S26 W58	127	AP	4	R	70	1	HSX
76	10	6						19722	S26 W70	126	AP	4	R	50	1	HSX
76	10	7	14447	S26 W85	127	900	1.0									

MCMATH REGION 14446 CMP DATE 1.6 RETURN OF REGION 14395 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	9	24	14446	N18 E90	127	600	1.5		N16 E68				R	130	1	HSX
76	9	25	14446	N18 E79	124	1500	3.0									
76	9	26						19721	N16 E60	130	(AP)	4	R	160	1	HSX
76	9	27	14446	N20 E48	126	1600	3.0	19721	N16 E47	129	(AP)	4	R	130	2	HSX
76	9	28	14446	N20 E39	125	1500	3.0	19721	N16 E33	129	(AP)	5	B	100	1	HSX
76	9	29	14446	N20 E26	125	1500	2.5		N16 E18				B	110	1	HSX
76	9	30	14446	N20 E14	124	1400	2.5		N16 E05				B	110	1	HSX
76	10	1	14446	N20 E01	123	1600	2.5		N17 W06				R	100	1	HSX
76	10	2	14446	N20 W13	122	1400	2.5		N16 W21				B	120	2	HSX
76	10	3	14446	N20 W24	120	1400	2.5	19721	N17 W34	129	AP	5	R	110	1	HSX
76	10	4	14446	N20 W39	121	1400	2.5	19721	N17 W47	129	AP	4	B	100	1	HSX
76	10	5	14446	N19 W52	122	1400	2.5	19721	N16 W59	128	AP	3	R	110	1	HSX
76	10	6						19721	N16 W72	126	AP	4	R	90	1	HSX
76	10	7	14446	N19 W83	125	800	1.0	19721	N17 W85	127	AP	3				

MCMATH REGION 14455 CMP DATE 2.0

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	9	30	14455	N40 E20	119	100	1.5									

MCMATH REGION 14474 CMP DATE 4.2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	3	14474	N02 W74	88	200	2.0	19725	N02 W69	85	AP	3				

MCMATH REGION 14456 CMP DATE 4.3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	9	30	14456	S13 E49	99	100	1.0									
76	10	1	14456	S14 E36	88	100	1.0									

REGIONS OF SOLAR ACTIVITY

OCTOBER 1976

MCMATH REGION 14470 CMP DATE 4.6

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	8	14470	N17 W54	83	200	2.5									
76	10	9	14470	N17 W68	82	200	1.5									

MCMATH REGION 14461 CMP DATE 6.8 RETURN OF REGION 14423 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	1	14461	S03 E71	53	300	2.0									
76	10	2	14461	S02 E62	47	300	1.5									
76	10	3	14461	S03 E45	51	200	1.5									
76	10	4	14461	S03 E28	54	200	1.0									

MCMATH REGION 14471 CMP DATE 7.4

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	8	14471	N15 W17	46	100	1.5									

MCMATH REGION 14466 CMP DATE 7.5

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	4	14466	N22 E38	44	200	2.0									
76	10	5	14466	N22 E25	45	100	2.0									

MCMATH REGION 14464 CMP DATE 8.6

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	3	14464	S05 E71	25	300	2.5									
76	10	4	14464	S04 E56	26	200	3.0									
76	10	5	14464	S03 E41	29	100	1.0									
76	10	7	14464	S03 E13	29	100	1.5		S03 E08				B	10	1	AXX
76	10	8	14464	S03 E00	29	200	2.5									
76	10	9	14464	S03 W17	31	200	2.0									
76	10	10	14464	S03 W28	29	200	2.0									
76	10	11	14464	S03 W39	31	200	2.5									
76	10	12	14464	S02 W54	32	100	1.0									

MCMATH REGION 14463 CMP DATE 8.9 RETURN OF REGION 14416 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	2	14463	S23 E85	24	800	2.0									
76	10	3	14463	S23 E68	28	600	2.0									
76	10	4	14463	S23 E55	27	700	2.0									
76	10	5	14463	S22 E41	29	600	2.0									
76	10	7	14463	S22 E15	27	700	2.0									
76	10	8	14463	S22 E03	26	800	2.0									
76	10	9	14463	S21 W14	28	600	2.0									
76	10	10	14463	S21 W26	27	700	2.5									
76	10	11	14463	S21 W35	27	700	2.0									
76	10	12	14463	S20 W49	27	700	1.5									
76	10	13	14463	S21 W62	27	500	1.5									
76	10	14	14463	S22 W75	27	500	1.0									

MCMATH REGION 14468 CMP DATE 10.0

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	4	14468	S24 E74	6	800	3.0									
76	10	5	14468	S24 E59	11	1100	3.0									
76	10	7	14468	S24 E33	9	800	2.5	19724	S22 E35	7	AF	3	B	10	2	AXX
76	10	8	14468	S24 E20	9	600	2.0									

REGIONS OF SOLAR ACTIVITY

OCTOBER 1976

MCMATH REGION 14468 (CONT) CMP DATE 10.0

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	9	14468	S24 E02	12	500	2.0									
76	10	10	14468	S25 W08	9	500	2.5	19726	S23 W06	9	A	1				
76	10	11	14468	S24 W20	12	400	2.5									
76	10	12	14468	S23 W33	11	400	2.0									
76	10	13	14468	S24 W45	10	300	2.0									
76	10	14	14468	S24 W58	10	300	1.5									
76	10	15	14468	S24 W73	12	300	1.0									

MCMATH REGION 14472 CMP DATE 10.6

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	8	14472	S09 E26	3	100	2.5									

MCMATH REGION 14488 CMP DATE 12.5

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	17	14488	N26 W66	338	300	2.0									

MCMATH REGION 14486 CMP DATE 13.5

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	16	14486	N38 W40	326	100	1.0									
76	10	17	14486	N38 W54	326	200	1.0									

MCMATH REGION 14469 CMP DATE 14.8 RETURN OF REGION 14441 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	7	14469	N26 E85	316	600	2.0									
76	10	8	14469	N27 E80	310	1400	2.5									
76	10	9	14469	N25 E66	309	1400	2.5									
76	10	10	14469	N26 E54	308	1600	3.0									
76	10	11	14469	N27 E42	310	1500	3.5	19727	N24 E41	310	BP	4				
76	10	12	14469	N26 E30	308	1400	3.5									
76	10	13	14469	N26 E17	308	1500	3.5	19727	N25 E23	301	AF	2				
76	10	14	14469	N26 E04	306	1500	3.0	19727	N29 E03	308	AP	3				
76	10	15	14469	N27 W10	309	1200	3.0									
76	10	16	14469	N27 W23	309	1300	2.5									
76	10	17	14469	N27 W35	307	1100	2.5									
76	10	18	14469	N27 W47	306	1000	2.0									
76	10	20	14469	N27 W78	307	800	1.5									
76	10	21	14469	N27 W88	306	400	1.0									

MCMATH REGION 14478 CMP DATE 14.8

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	14	14478	N17 E03	309	100	1.5									

MCMATH REGION 14475 CMP DATE 16.5

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	12	14475	S28 E51	287	500	2.5	19728	S26 E41	289	AP	3	B	10	1	AXX
76	10	13	14475	S26 E38	287	700	3.5	19728	S26 E33	291	BP	4	B	10	2	BXO
76	10	14	14475	S26 E25	287	1000	4.0	19728	S26 E23	288	B	4	B	30	16	DRI
76	10	15	14475	S26 E12	287	1200	4.0	19728	S26 E10	289	B	4	B	140	14	DAI
76	10	16	14475	S26 W01	287	2000	3.5	19728	S27 W04	289	BF	4	B	180	11	DAI
76	10	17	14475	S26 W14	286	2000	3.5	19728	S27 W15	286	B	5	B	140	5	DAI
76	10	18	14475	S26 W26	285	1900	3.5	19728	S27 W29	287	B	4	B	120	6	DAI
76	10	19						19728	S26 W41	286	B	4	B	70	5	DSO
76	10	20	14475	S27 W57	286	2000	3.0		S26 W50				B	30	1	HSX

REGIONS OF SOLAR ACTIVITY

OCTOBER 1976

MCMATH REGION 14475 (CONT) CMP DATE 16.5

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	21	14475	S27 W67	285	2000	3.0		S28 W70				B	10	1	AXX
76	10	22	14475	S30 W80	286	1700	2.5									

MCMATH REGION 14477 CMP DATE 16.9

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	13	14477	N18 E45	280	100	1.0									
76	10	14	14477	N18 E31	281	100	1.5									

MCMATH REGION 14479 CMP DATE 17.3 RETURN OF REGION 14425 ROTATION 3

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	11	14479	S12 E78	274	300	1.0									
76	10	12	14479	S11 E64	274	400	1.0									
76	10	13	14479	S11 E50	275	400	1.0									
76	10	14	14479	S12 E37	275	400	1.5									
76	10	15	14479	S11 E23	276	500	1.5									
76	10	16	14479	S11 E10	276	500	1.5									
76	10	17	14479	S10 W02	274	600	1.5									
76	10	18	14479	S10 W16	275	600	1.5									
76	10	20	14479	S10 W47	276	500	1.0									
76	10	21	14479	S10 W58	276	400	1.0									
76	10	22	14479	S10 W70	276	400	1.0									

MCMATH REGION 14476 CMP DATE 18.3

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	12	14476	S10 E78	260	2000	3.5	19729	S09 E76	261	AP	3	B	40	1	HSX
76	10	13	14476	S08 E64	261	1600	3.0	19729	S09 E62	262	AF	3	B	40	1	HSX
76	10	14	14476	S09 E51	261	1400	3.0	19729	S09 E49	262	AF	4	B	30	1	HSX
76	10	15	14476	S09 E38	261	1200	3.0	19729	S09 E35	264	AF	4	B	0	2	AXX
76	10	16	14476	S09 E25	261	1200	2.5	19729	S11 E22	263	AF	3	B	10	1	AXX
76	10	18	14476	S09 W03	262	1000	3.0	19729	S09 W04	262	AF	3	B	10	2	AXX
76	10	17	14476	S09 E10	262	1000	3.0	19729	S10 E09	262	BF	3	B	20	4	BXO
76	10	18	14476	S09 W03	262	1000	3.0	19729	S09 W04	262	AF	3	B	10	2	AXX
76	10	20	14476	S08 W37	266	900	3.0		S09 W31				B	30	3	CRO
76	10	21	14476	S09 W47	265	800	3.0		S10 W45				B	20	3	HSX
76	10	22	14476	S10 W59	265	700	2.5		S10 W60				B	10	2	AXX
76	10	23	14476	S09 W74	265	600	2.0									

MCMATH REGION 14483 CMP DATE 18.4

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	15	14483	S28 E38	261	100	2.5									

MCMATH REGION 14487 CMP DATE 19.4

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	16	14487	S03 E37	249	100	1.5									

MCMATH REGION 14499 CMP DATE 20.5

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	23	14499	N23 W43	234	200	2.0									

REGIONS OF SOLAR ACTIVITY

OCTOBER 1976

MCMATH REGION 14500 CMP DATE 20.7

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	26	14500	S04 W79	231	600	2.5									

MCMATH REGION 14489 CMP DATE 21.3

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	17	14489	S06 E50	222	200	2.5									
76	10	18	14489	S06 E36	223	200	1.5									

MCMATH REGION 14484 CMP DATE 22.4

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	15	14484	S23 E90	209	300	1.5									
76	10	16	14484	S25 E81	205	1000	3.5	19730	S25 E70	215	AP	3				
76	10	17	14484	S25 E64	208	800	3.5	19730	S25 E61	210	B	1				
76	10	18	14484	S25 E51	208	1000	3.5									
76	10	20	14484	S24 E20	209	1000	3.5									
76	10	21	14484	S24 E09	209	800	3.5									
76	10	22	14484	S24 W04	210	800	3.0									
76	10	23	14484	S24 W18	209	700	3.0									
76	10	26	14484	S24 W58	210	700	2.5									
76	10	27	14484	S25 W70	210	700	2.0									
76	10	28	14484	S26 W82	209	500	1.0									

MCMATH REGION 14493 CMP DATE 23.0

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	20	14493	S37 E28	201	100	1.0									

MCMATH REGION 14491 CMP DATE 23.7

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	20	14491	N25 E37	192	100	1.0									
76	10	21	14491	N25 E27	191	100	1.5									

MCMATH REGION 14494 CMP DATE 23.9

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	21	14494	N30 E27	191	300	2.5									
76	10	22	14494	N30 E16	190	400	3.0		N29 E15				B	30	9	BXO
76	10	23	14494	N30 E02	189	1000	4.0	19731	N29 E02	189	D	4	B	140	26	CSI
76	10	24						19731	N29 W09	188	BP	5	B	200	25	CSI
76	10	25						19731	N29 W22	188	B	5				
76	10	26	14494	N30 W37	189	2600	3.5	19731	N30 W36	189	B	5	R	340	28	DKI
76	10	27	14494	N30 W50	190	3100	3.5	19731	N30 W48	187	B	4	B	500	20	DAI
76	10	28	14494	N30 W63	190	3000	3.5	19731	N30 W61	187	B	4	B	200	10	DAO
76	10	29	14494	N30 W76	190	2800	3.0	19731	N29 W75	188	B	3	B	120	3	DSO
76	10	30							N29 W78				H	190	3	EAO

MCMATH REGION 14496 CMP DATE 24.4

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	22	14496	S24 E24	182	100	1.0									

REGIONS OF SOLAR ACTIVITY

OCTOBER 1976

MCMATH REGION 14490 CMP DATE 24.6

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	18	14490	N07 E85	174	400	2.5									
76	10	20	14490	N07 E50	179	600	3.0									
76	10	21	14490	N07 E39	179	400	3.0									
76	10	22	14490	N08 E27	179	400	3.0									
76	10	23	14490	N08 E12	179	200	2.0									
76	10	26	14490	N09 W27	179	200	1.0									
76	10	27	14490	N10 W40	180	200	1.0									
76	10	28	14490	N10 W53	180	200	1.0									

MCMATH REGION 14501 CMP DATE 24.7

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	26	14501	N01 W26	178	100	1.5									
76	10	27	14501	N01 W39	179	100	1.0									

MCMATH REGION 14492 CMP DATE 26.2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	20	14492	N38 E68	159	100	2.5									
76	10	21	14492	N38 E59	159	100	1.5									

MCMATH REGION 14497 CMP DATE 28.5 RETURN OF REGION 14446* ROTATION 4

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	22	14497	N18 E80	126	1100	1.0									
76	10	23	14497	N17 E65	126	800	2.0									
76	10	26	14497	N17 E24	128	500	2.5									
76	10	27	14497	N17 E12	128	600	2.0									
76	10	28	14497	N17 W01	128	500	2.0									
76	10	29	14497	N17 W14	128	500	2.0									
76	10	31	14497	N17 W43	128	500	1.5									
76	11	01	14497	N17 W55		600	1.5									
76	11	02	14497	N17 W67		700	1.5									
76	11	03	14497	N17 W80		500	1.0									

MCMATH REGION 14498 CMP DATE 29.2 RETURN OF REGION 14447 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
76	10	23	14498	S27 E75	110	600	1.5	19732	S28 E69	122	AP	2	B	20	1	AXX
76	10								S27 E82				B	20	1	AXX
76	10	24						19732	S28 E56	123	AP	3	B	20	1	AXX
76	10	25						19732	S28 E44	122	AP	3				
76	10	26	14498	S27 E34	118	400	2.0	19732	S27 E31	122	AP	4	R	20	1	HRX
76	10	27	14498	S28 E22	118	400	2.0		S29 E18				B	0	1	AXX
76	10	28	14498	S28 E09	118	300	2.0		S29 E05				B	10	1	AXX
76	10	29	14498	S28 W05	119	300	2.0		S29 W07				B	10	2	BXO
76	10	31	14498	S28 W31	116	400	2.0									
76	11	01	14498	S29 W41		400	1.5									
76	11	02	14498	S29 W55		300	1.5									
76	11	03	14498	S29 W68		400	1.5									
76	11	04	14498	S30 W85		200	1.0									

* An asterisk beside the "Return of Region" number indicates that the new region is only part of the area of the old region.

Note: Region 14476 is mostly new plage that has formed in the following part of old region 14425.
No calcium spectroheliograms were secured at the McMath-Hulbert Observatory on October 6, 19, 24, 25 and 30, 1976.
No sunspot observations were made at Mt. Wilson Observatory on October 1, 2, 20, 21 and 22, 1976.

DAILY CALCIUM PLAGE INDEX

OCTOBER 1976

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
76	10	1	9.7	76	10	11	5.8	76	10	21	7.9
76	10	2	9.6	76	10	12	7.1	76	10	22	6.0
76	10	3	9.3	76	10	13	9.2	76	10	23	7.0
76	10	4	8.4	76	10	14	10.9	76	10	24	*
76	10	5	7.2	76	10	15	11.1	76	10	25	*
76	10	6	*	76	10	16	12.9	76	10	26	9.3
76	10	7	3.2	76	10	17	13.5	76	10	27	8.3
76	10	8	4.1	76	10	18	12.3	76	10	28	5.5
76	10	9	3.8	76	10	19	*	76	10	29	3.0
76	10	10	5.4	76	10	20	9.7	76	10	30	*
								76	10	31	1.5

* NO OBSERVATIONS

SUDDEN IONOSPHERIC DISTURBANCES

OCTOBER 1976

DAY	UNIVERSAL TIME				WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE							KNOWN FLARE	McMATH REGION
	START	END	MAX	IMP		SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD		
08	1711	1750	1722	1-	1	1							*	
19	1659	1755	1714	1	3						2		1701E	14475

PERIODS OF NO OBSERVATIONS:

DATE	TIME (UT) and STATION
01-09	0000-2400 A41
01-12	0000-2400 A36
01-31	0000-2400 A40
01	0000-1000 KA
04	0009-0114 UM (13 kHz), 1350-1406 TM, 1940-2308 UM (10 kHz)
06	2208-2302 UM (10 kHz)
07-08	0000-2400 TN
09-11	0000-2400 A30
11	2226-2334 TM
13-16	0000-1500 KA
13	0000-2400 TN, 0320-0432 UM (10 kHz)
14	2015-2130 UM (13 kHz)
15-17	0000-2400 A28
15	2008-2108 UM (10 kHz)
16-17	0000-2400 A41
16-31	0000-2400 A29
17	0510-0615 UM (10 kHz)
18-23	0000-2400 A36
19-22	0000-2400 TN
19-31	0000-2400 KA
20-25	0000-2400 A41
22	1428-1450 TM
23	1950-2107 UM (10 kHz)
24-28	0000-2400 TN
24	1954-2118 UM (13 kHz), 1958-2058 UM (13 kHz)
28	0000-2400 A30, 1955-2100 UM (13 kHz)
29	0000-2400 A36
30	0000-2400 A30, 0000-2400 A36
31	0000-2400 A30, 0000-2400 A36, 1942-2048 UM (10 kHz)

STATIONS REPORTING FOR OCTOBER 1976

AAVSO (A1, A19, A21, A28, A29, A30, A31, A34, A35, A36, A37, A40, A41) (SES) (A1, A26, A31) (SEA) (A31) (SWF)
DARMSTADT (DA) (SWF)
HERSTMONCEUX (HC) (SEA)
HIRAISO (HI) (SWF)
HOBART (TA) (SEA)
HUANCAYO (HU) (SWF)
INUBO (IN) (SPA)
KASUAGE (KA) (SPA)
MCMATH (MC) (SWF, SCNA)
PANSKA VES (PU) (SWF, SEA, SES)
PRESTON (LO) (SEA)
SAO PAULO (UM) (SES, SPA)
SOFIA (SF) (SEA)
ST CLOUD (SC) (SES)
TABLE MOUNTAIN (TM) (SPA, LF-SPA)
TORINO (TN) (SPA)
UPICE (UI) (SEA)

SID's BY McMATH REGION

OCTOBER 1976

DAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
REGION 75																			1												
X-RAY																															
UNKNOWN																															
NO FP								1																							

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

OCTOBER 1976

OCT 1976	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
01	0000	0942	MANI							0426.1	0427.0	3	III
	1045	2220	SGMR										
	0545	1650	DURN				1151.5	1152.3	3				IIIG
	1315	2245	HARV										
	2147	2400	MANI										
02	0000	0940	MANI										
	0545	1553	DURN	0550 D	0558	3	0550 D	0558	2				IC,DC,N
	1046	2219	SGMR										
	1316	2245	HARV							1628	2120	1	IIIN
	1640	1645	DURN	1640 D	1645 E	2	1640 D	1645 E	2				IC,DC,N
			HARV				1849		1				I
	2147	2400	MANI										
03	0000	0939	MANI										
	0550	1644	DURN	0554	0556	1	0554	0556	1				I
			DURN	0917	1644 E	1	0917	1644 E	1				I,DC,N
	1047	2217	SGMR										
	1315	2245	HARV							1717	2002	1	IIIN
	2146	2400	MANI										
04	0000	0936	MANI										
	0553	1642	DURN	0918	0940	1	0918	0940	1				I,DC,N
	1048	2215	SGMR										
	1448	2245	HARV							1836	1837	2	I
	2146	2400	MANI										
05	0000	0936	MANI										
	0554	1641	DURN										
	1049	2213	SGMR										
	1316	2245	HARV										
	2146	2400	MANI										
06	0000	0935	MANI										
	0602	1250	WEIS										
	0555	1639	DURN	0817	0828	1	0817	0828	1				IC,DC,N
	1050	2212	SGMR										
	1316	2245	HARV										
	1556	1617	WEIS										
	2146	2400	MANI										
07	0000	0934	MANI										
	0557	0618	DURN										
	0604	0758	WEIS										
	0630	1638	DURN										
	0803	1113	WEIS										
	1051	2210	SGMR							1145.8	1146.0	1	III
	1317	2245	HARV										
	1542	1611	WEIS										
	2146	2400	MANI										
08	0000	0934	MANI										
	0600	1635	DURN										
	0605	1614	WEIS										
	1053	2208	SGMR										
	1317	2245	HARV										
	2146	2400	MANI										
09	0000	0933	MANI										
	0603	1633	DURN										
	0607	1620	WEIS										
	1054	2207	SGMR										
	1317	2245	HARV										
	2146	2318	MANI										
10	0604	1631	DURN										
	0734	0933	MANI										
	1055	2205	SGMR										
	1332	2245	HARV										
	2146	2400	MANI										

Errata: On page 100 of SGD 382-Part I the Type IV event of September 30, 1976 as reported by University of Colorado (BOUL) should read Metric Band: Intensity 3, Dekametric Band: observed 2103.0 - 2400 UT.

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

OCTOBER 1976

OCT 1976	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
11	0000	0933	MANI										
	0605	1629	DURN										
	0658	1419	WEIS										
	1056	2203	SGMR										
	1332	2245	HARV										
	1425	1433	WEIS										
	1434	1507	WEIS										
	1522	1607	WEIS										
	2147	2400	MANI										
12	0000	0933	MANI										
	0611	0804	WEIS										
	0616	1628	DURN										
	0806	1249	WEIS				1206.1	1210.2	1				IIIG
	1057	2202	SGMR							1209.3	1209.8	1	III
			SGMR							1315.3	1315.6	1	III
	1332	2245	HARV										
	2147	2400	MANI										
13	0000	0932	MANI										
	0609	1625	DURN										
	0715	1043	WEIS										
	1050	1604	WEIS										
	1058	2200	SGMR										
	1332	2245	HARV										
	2147	2400	MANI										
14	0000	0931	MANI										
	0608	1623	DURN										
	0615	1602	WEIS										
	1059	2158	SGMR										
	1333	2245	HARV										
	2147	2400	MANI										
15	0000	0931	MANI										
	0516	1050	WEIS										
	0608	1618	DURN	0629.2	0629.6	1							IIIG
			DURN	0900.7	0900.8		0900.8	0900.8					III,W
			DURN	0910.2	0910.2	1	0910.2	0910.2	1				III
	1101	2157	SGMR										
	1333	2245	HARV										
	2147	2400	MANI										
16	0000	0930	MANI										
	0609	1616	DURN										
	0616	1558	WEIS										
	1102	2155	SGMR										
	1332	2245	HARV										
	2147	2400	MANI										
17	0000	0923	MANI										
	0819	1200	WEIS										
	1103	2153	SGMR										
	0742	1614	DURN	1227.9	1230.2	2							DCIM
	1333	2245	HARV										
	2147	2400	MANI										
18	0000	0923	MANI										
	0612	1612	DURN										
	0703	1033	WEIS										
	1048	1604	WEIS										
	1104	2152	SGMR										
	1332	2245	HARV										
	2147	2400	MANI										
19	0000	0923	MANI										
	0613	1610	DURN										
	0622	1552	WEIS										
	1105	2150	SGMR										
	1333	2245	HARV										

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

OCTOBER 1976

OCT 1976	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
20	0000	0921	MANI										
	0614	1610	OURN										
	0625	0805	WEIS										
	0825	1600	WEIS										
	1107	2143	SGMR										
	1332	2245	HARV										
	2148	2400	MANI										
21	0000	0920	MANI										
	0616	0812	OURN										
	0625	1230	WEIS										
	1108	2147	SGMR										
	1332	2245	HARV										
	1530	1547	WEIS										
	2149	2400	MANI										
22	0000	0919	MANI										
	0620	1608	OURN										
	0627	1210	WEIS										
	1110	2146	SGMR										
	1333	2245	HARV										
	2148	2400	MANI										
23	0000	0919	MANI										
	0620	0659	OURN										
	0629	1420	WEIS										
	0709	1608	OURN										
	1110	2144	SGMR										
	1332	2245	HARV										
	2148	2400	MANI										
24	0000	0001	MANI										
	0030	0539	MANI										
	0608	0919	MANI										
	0620	1606	OURN										
	1112	2143	SGMR										
	1333	2245	HARV										
	2148	2400	MANI										
25	0000	0919	MANI										
	0620	1604	OURN										
	0708	1600	WEIS				0714	1250	2				ISCONT
	1113	2141	SGMR										
	1332	2245	HARV										
	2150	2400	MANI										
26	0000	0919	MANI										
	0621	1604	OURN	0621 D	0747	1	0621 D	0747	1				IC,DC,N
	0851	1043	OWIN				0851	1043	1				IS
	1106	1122	OWIN				1106	1122	1				IS
	1114	2140	SGMR										
	0930	1611	WEIS				1255	1258.7	2				IIIGG
			OURN	1257.0	1257.3	3	1257.0	1257.3	3				IIIG
			OURN	1258.3	1258.5	3	1258.3	1258.5	3				IIIG
	1332	2245	HARV				2043		1				IIIG,U
	2151	2400	MANI										
27	0000	0918	MANI										
	0623	1604	OURN										
	0710	1100	WEIS										
	0943	1438	OWIN				0943	1225	1				IS
	1115	2138	SGMR										
			OWIN				1225	1438	1				IN
	1333	2245	HARV				1923	1925	1				IIIG
	2151	2400	MANI										
28	0000	0917	MANI							0105.8	0106.2	2	III
			OWIN				0743.0	0743.4	2				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

OCTOBER 1976

OCT 1976	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
28	0743	1437	DWIN				0743	1437	1				IN
			DWIN				0750.5	0751.8	2				IIIG
			DWIN				0755.0	0755.6	2				IIIG
			DWIN				0800.1	0800.2	1				IIIG
			DWIN				0809.9	0813.2	2				IIIGG
			DWIN				0824.0	0825.5	2				IIIGG
	0746	0846	DURN	0825.3	0825.5	1	0825.3	0825.5	1				IIIG
			DWIN				0826.5	0827.1	1				IIIG
			DWIN				0835.6	0836.0	2				IIIG
			DWIN				0844.9	0846.2	2				IIIG
			DWIN				0854.3	0855.0	1				IIIG
			DWIN				0909.0	0913.2	2				IIIG
			DWIN				0916.4	0917.1	2				IIIG
			DWIN				0921.9	0922.1	2				IIIG
			DWIN				0924.9	0925.1	2				IIIG
			DWIN				0941.5	0941.6	2				IIIG
			DWIN				0943.0	0945.0	2				IIIGG
			DWIN				0948.0	0949.4	2				IIIGG
			DWIN				0955.4	1001.1	2				IIIGG
			DWIN				1044.0	1044.5	1				IIIG
			DWIN				1102.0	1102.1	1				IIIG
			DWIN				1106.6	1107.3	3				IIIG
			DWIN				1114.6	1114.7	1				IIIG
			DWIN				1116.5		1				IIIB
	1117	2137	SGMR										
			DWIN				1121.5	1121.6	1				IIIG
			DWIN				1137.4	1138.7	2				IIIG
			DWIN				1140.7	1141.4	2				IIIG
			DWIN				1214.5	1214.7	2				IIIG
			DWIN				1217.4	1219.0	2				IIIG
			DWIN				1221.5	1221.8	2				IIIG
			DWIN				1232.3		1				IIIB
			DWIN				1337.0	1337.3	2				IIIG
			DWIN				1339.6	1339.7	2				IIIG
			DWIN				1341.3	1341.4	1				IIIG
			DWIN				1418.2	1418.5	2				IIIG
	1332	2245	HARV				1821	1823	1				IIIG
			HARV				1827	1829	1				IIIG
			HARV				1835		2	1835		2	IIIB
			HARV				1857	1858	2				IIIG
			HARV				1940		2				IIIB
			HARV				2015	2016	2				IIIG
			HARV				2056	2057	1				IIIG
			HARV				2133		1				IIIG
			HARV				2135	2136	2				IIIG
	2151	2400	MANI										
			HARV				2233	2234	1				IIIG
29	0000	0917	MANI							0142.0	0142.2	2	III
			MANI							0234.7	0235.4	2	III
			MANI							0241.6	0242.1	3	III
	0718	0909	WEIS				0727.5	0733.3	2				IIIGG
	0806	0940	DWIN				0810.5	0813.0	2				IIIG
			DWIN				0816.7	0817.0	1				IIIG
			DWIN				0820.7	0821.3	2				IIIG
			WEIS				0821.1	0821.2	1				IIIB
			DWIN				0910.0	0910.8	1				IIIG
			DWIN				0913.6	0914.1	1				IIIG
			DWIN				0919.8	0919.9	2				IIIG
			DWIN				0924.3	0924.7	2				IIIG
	0926	1030	WEIS				1025.4	1025.7	3				IIIG
			WEIS				1028.2	1028.5	1				IIIG
	1034	1535	WEIS				1034.8	1035.2	3				IIIGG
			WEIS				1039.4	1039.6	3				IIIGG
			WEIS				1053.4	1053.5	1				IIIG
			WEIS				1137.5	1141.1	3				IIIGG
			WEIS				1211.1	1211.5	2				IIIG
			WEIS				1247.2	1249.5	3				IIIGG
			WEIS				1343.5	1343.6	1				IIIB
			WEIS				1412.8	1412.9	1				IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

OCTOBER 1976

OCT 1976	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
29	1333	2245	HARV				1426		1				IIIG
			WEIS				1525.5	1532.0	2				IIIS
			HARV				1638	1639	3	1638	1639	2	IIIG
			HARV				1724		3				IIIB
	1118	2136	SGMR							1732.0	1732.8	1	III
			HARV				1732	1733	3	1732	1733	3	IIIG,V
			HARV				1747	1748	3	1747	1748	3	IIIG,V
			HARV				1812		2	1812		2	IIIG
			SGMR							1815.2	1815.4	1	III
			HARV				1815	1816	3	1815	1816	3	IIIG,V
			HARV				1827	1830	2	1827	1830	2	IIIG
			HARV				1833	1835	3	1833	1835	3	IIIG
			HARV				1908	1910	1				IIIG
			HARV				1913		3	1913		3	IIIB
			HARV				1955		3	1955		3	IIIG
			HARV				2056		2	2056		2	IIIB
			HARV				2119		3	2119		3	IIIB,V
			HARV				2133	2134	1				IIIGG
			HARV				2158		1	2158		1	IIIB
	2152	2400	MANI							2204.6	2205.6	2	III
			HARV				2204	2206	3	2204	2206	3	IIIGG,V
			HARV				2208		1				IIIG,V
			MANI							2314.7	2315.2	1	III
			MANI							2316.4	2316.6	1	III
30	0000	0917	MANI							0321.9	0322.4	3	III
	0625	1603	DURN	0630.2	0630.3	3	0630.2	0630.3	3				III
	0639	1533	WEIS				0711.8	0714.7	2				IIIGG
			MANI							0712.0	0712.7	3	III
			WEIS				0919.0	0919.3	1				IIIB
			WEIS				0923.7	0924.0	1				III,V
			WEIS				1110.4	1110.7	2				IIIG
			WEIS				1125.4	1125.6	2				IIIG
			WEIS				1151.2	1151.7	2				IIIG
			WEIS				1155.3	1157.5	2				IIIGG
	1119	2134	SGMR							1156.7	1157.0	1	III
			SGMR							1235.1	1241.9	2	V
			WEIS				1237.6	1241.3	2				IIIGG
			WEIS				1246.9	1247.3	1				IIIG
			WEIS				1504.5	1505.3	1				IIIG
	1332	2245	HARV				1653	1657	3	1653	1657	3	IIIG
			SGMR							1654.3	1657.1	1	CONT
			SGMR							1659.9	1702.2	2	V
			HARV				1659	1703	3	1659	1703	3	IIIG,V
			HARV				1727		2	1727		2	IIIB
			SGMR							1859.2	1902.3	1	CONT
			HARV				1859	1902	3	1859	1902	3	IIIG
	2152	2400	MANI										
31	0000	0917	MANI							0300.3	0303.5	3	IIIG
	0625	1603	DURN										
	0640	1531	WEIS										
	1120	2133	SGMR										
	1332	2345	HARV				1801	1802	1	1801	1802	1	IIIG
	2152	2400	MANI										

The symbols used in connection with the spectral type in describing the important bursts are as follows:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of bursts
C = Underlying continuum (particularly with type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III
RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity

EAST-WEST SOLAR SCANS

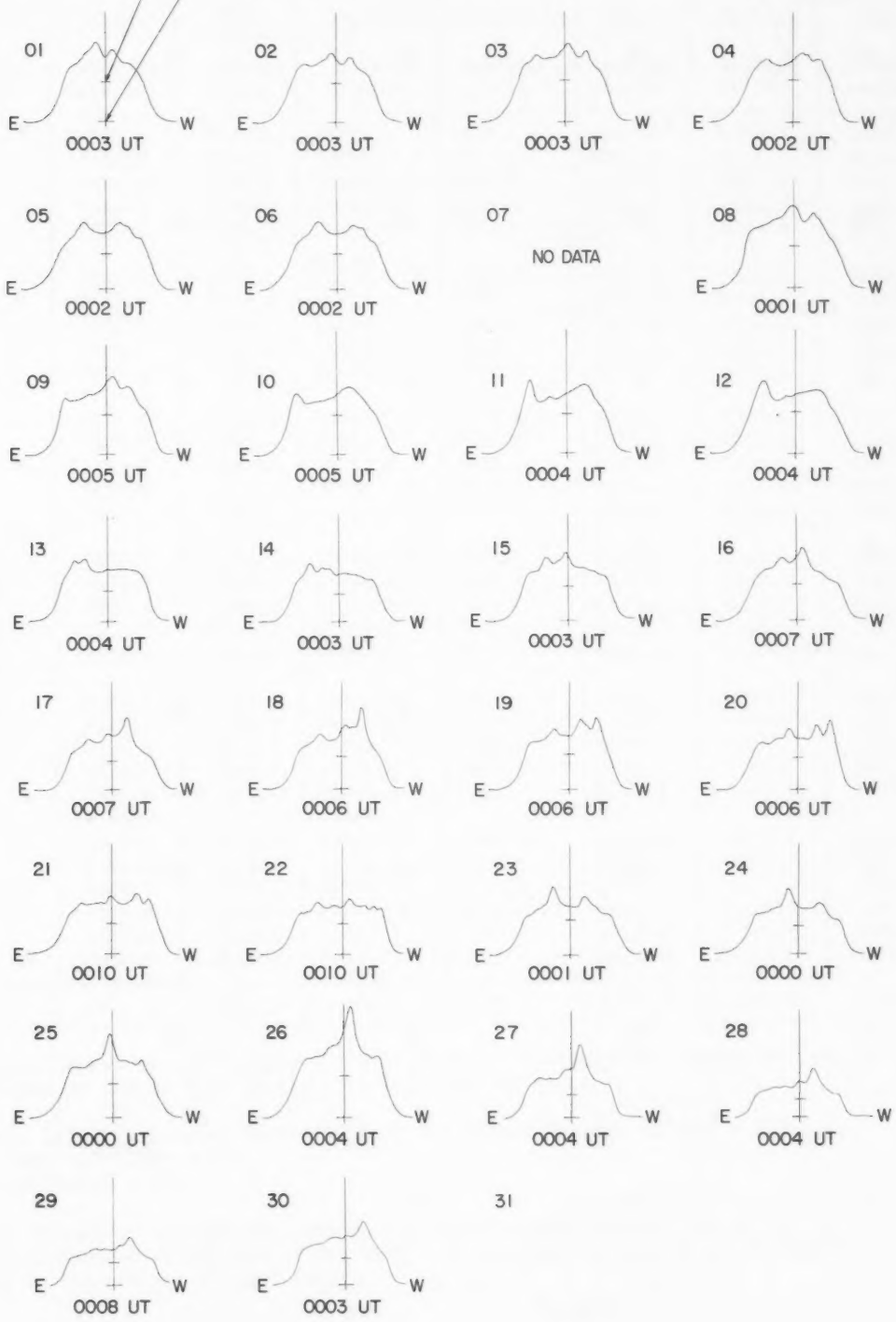
OCTOBER 1976

Fleurs, Australia

ESTIMATED QUIET SUN LEVEL

COLD SKY LEVEL

21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution



EAST-WEST SOLAR SCANS

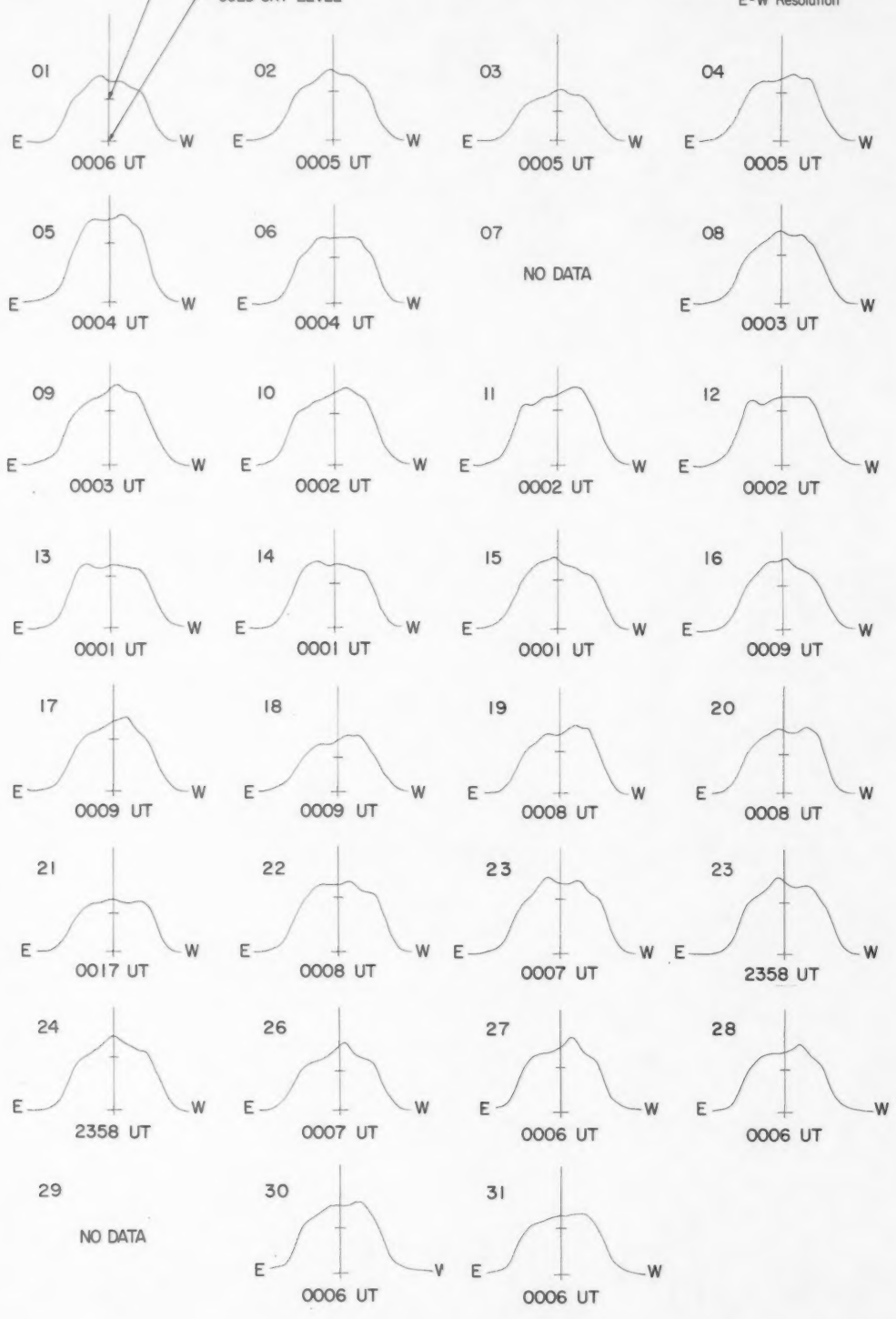
OCTOBER 1976

Fleurs, Australia

ESTIMATED QUIET SUN LEVEL

COLD SKY LEVEL

43 cm
Fan-Beam with 4 minutes of arc
E-W Resolution



COSMIC RAY INDICES

(Neutron Monitors)

OCTOBER 1976

OCT. 1976	THULE Average cts/hr	ALERT Average cts/hr	DEEP RIVER Average cts/hr	CALGARY Average cts/hr	SULPHUR MT Average cts/hr	KIEL Average cts/hr	CLIMAX Average cts/hr	TOKYO Average cts/hr
1		7510.6	7084.6	11787.4	9110.4	6368.6	4273.7	3659.8
2		7514.0	7074.6	11810.3	9132.6	6375.9	4287.3	3665.0
3		7538.3	7113.1	11869.2	9162.8	6396.5	4303.0	3673.8
4		7561.3	7129.9	11921.6	9163.3	6415.5	4324.7	3684.4
5		7550.8	7108.7	11880.0	9161.6	6401.3	4306.8	3685.6
6		7546.6	7122.1	11898.1	9160.0	6383.7	4323.6	3684.5
7		7562.1	7127.8	11893.0	9161.8	6376.8	4309.9	3681.4
8		7541.9	7122.8	11858.5	9141.0	6370.6	4284.8	3668.8
9		7526.1	7125.5	11834.1	9130.0	6373.5	4274.4	3661.2
10		7533.3	7136.5	11846.6	9147.5	6376.3	4281.4	3673.6
11		7528.0	7118.0	11853.8	9139.6	6390.7	4295.1	3673.0
12		7500.0	7093.4	11814.3	9101.1	6385.3	4277.6	3666.5
13		7488.4	7089.4	11747.6	9034.7	6367.3	4262.7	3661.3
14		7484.9	7107.8	11786.1(8)	9046.6	6356.4	4258.0	3652.9
15		7472.1	7074.7	11764.5	9054.1	6352.8	4276.0	3660.9
16	No observations	7445.9	7046.1	11702.8	9000.9	6336.4	4260.4	3660.8
17		7475.0	7059.1	11736.3	9022.4	6344.0	4269.4	3665.5
18		7512.3	7095.9	11782.8	9070.4	6376.6	4292.9	3670.0
19		7502.3	7098.2	11829.6	9092.9	6371.7	4298.4	3665.9
20		7483.9	7070.3	11784.3	9071.8	6361.3	4276.7	3660.1
21		7483.3	7111.9	11822.3	9117.0	6349.5	4276.9	3662.7
22		7475.1	7104.9	11794.2(22)	9105.3(23)	6346.1	4278.0	3661.8
23		7479.1	7083.5	11738.3	9092.1	6349.6	4273.7	3658.6
24		7479.4	7062.0	11694.6	9065.1	6339.5	4264.1	3647.8
25		7509.8	7084.1	11709.9	9090.7	6361.7	4280.3	3666.5
26		7517.2	7103.0	11730.7	9089.3	6370.6	4286.2	3667.4
27		7514.0	7118.6	11741.7	9093.6	6388.9	4287.2	3662.0
28		7540.8	7109.1	11772.9	9101.5	6387.3	4298.5	3664.1
29		7568.9	7105.7	11862.6(23)	9170.2(23)	6404.5	4310.5	3681.8
30		7575.0	7110.4	11897.2	9169.8	6413.5	4306.2	3684.0
31		7537.9	7106.2	11836.3	9125.3	6426.8	4312.1	3681.3
MEAN		7514.8	7099.9	11806.5	9107.3	6374.8	4287.3	3668.1

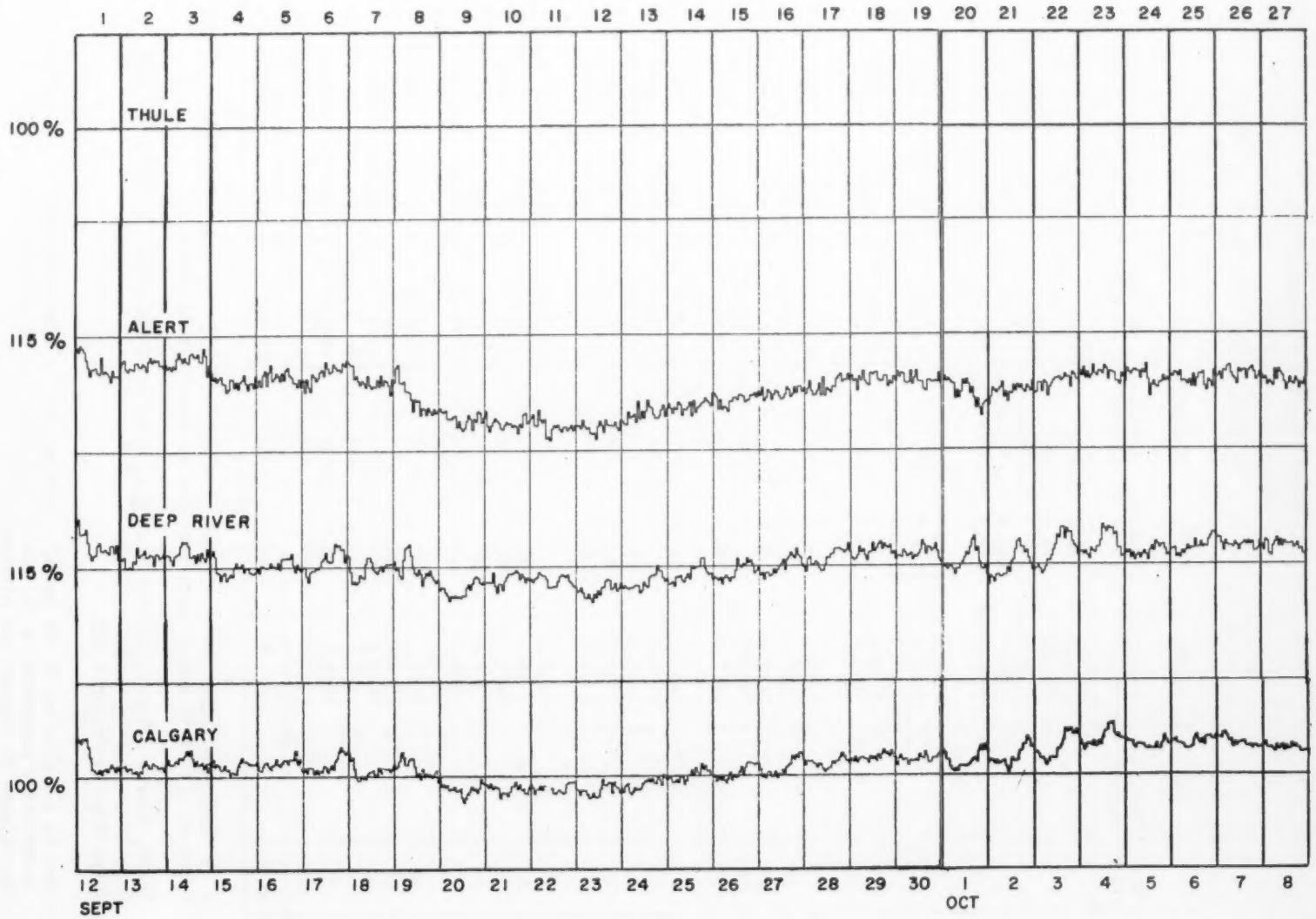
( ) Number of hours for which data are available if less than 24. Number of Section Hours at Climax if sum of both sections is less than 40 hours.

Thule, Alert, Calgary, Sulphur Mountain, Kiel and Climax Scaling Factors = 100.
Deep River Scaling Factor = 300.
Tokyo Scaling Factor = 128.

* Due to the closing of the Geopole Station the Thule neutron monitor operations were temporarily suspended at the end of May 1976. It is expected that observations will be resumed in the not too distant future.

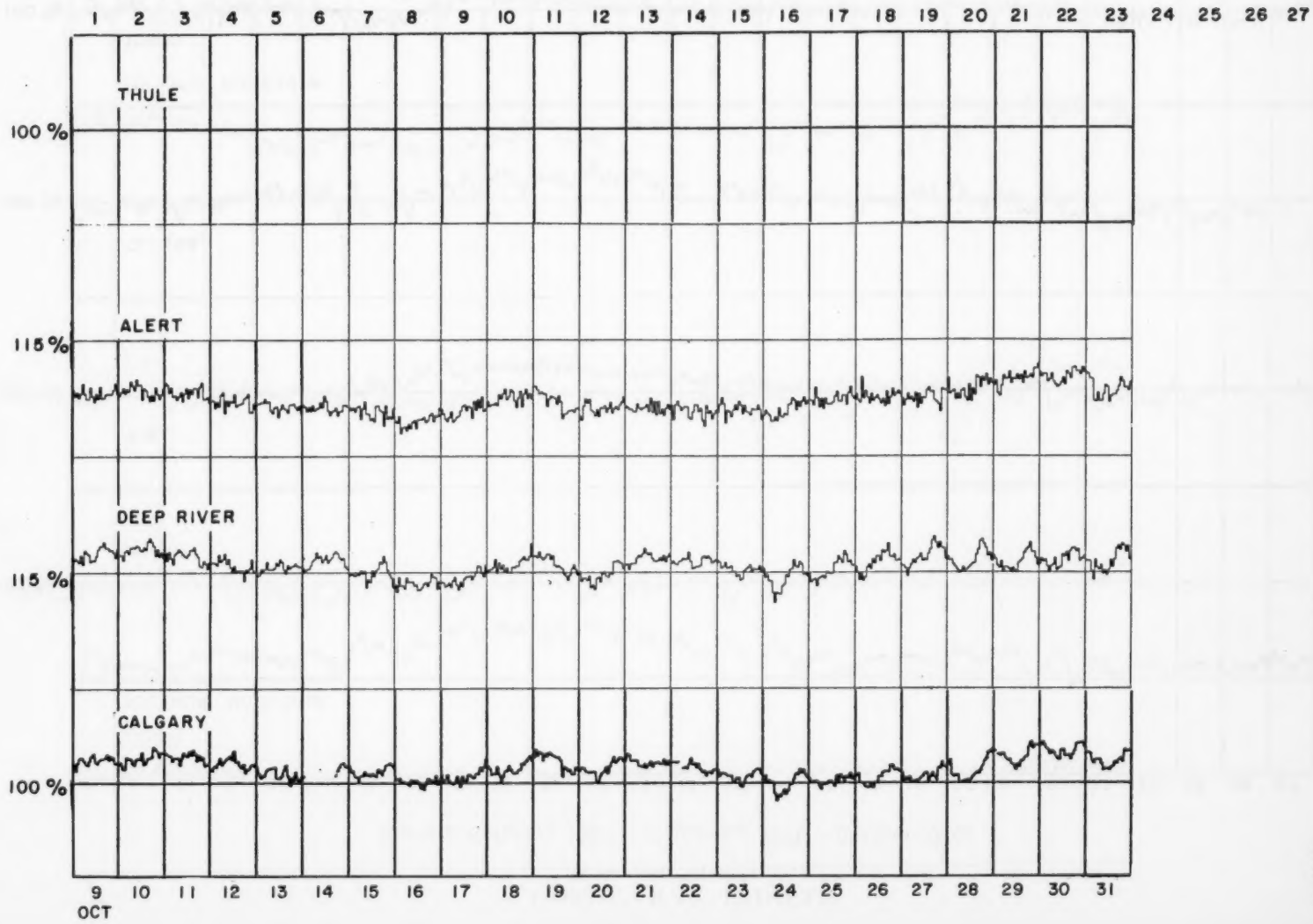
COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1957 (September 1976 - October 1976)



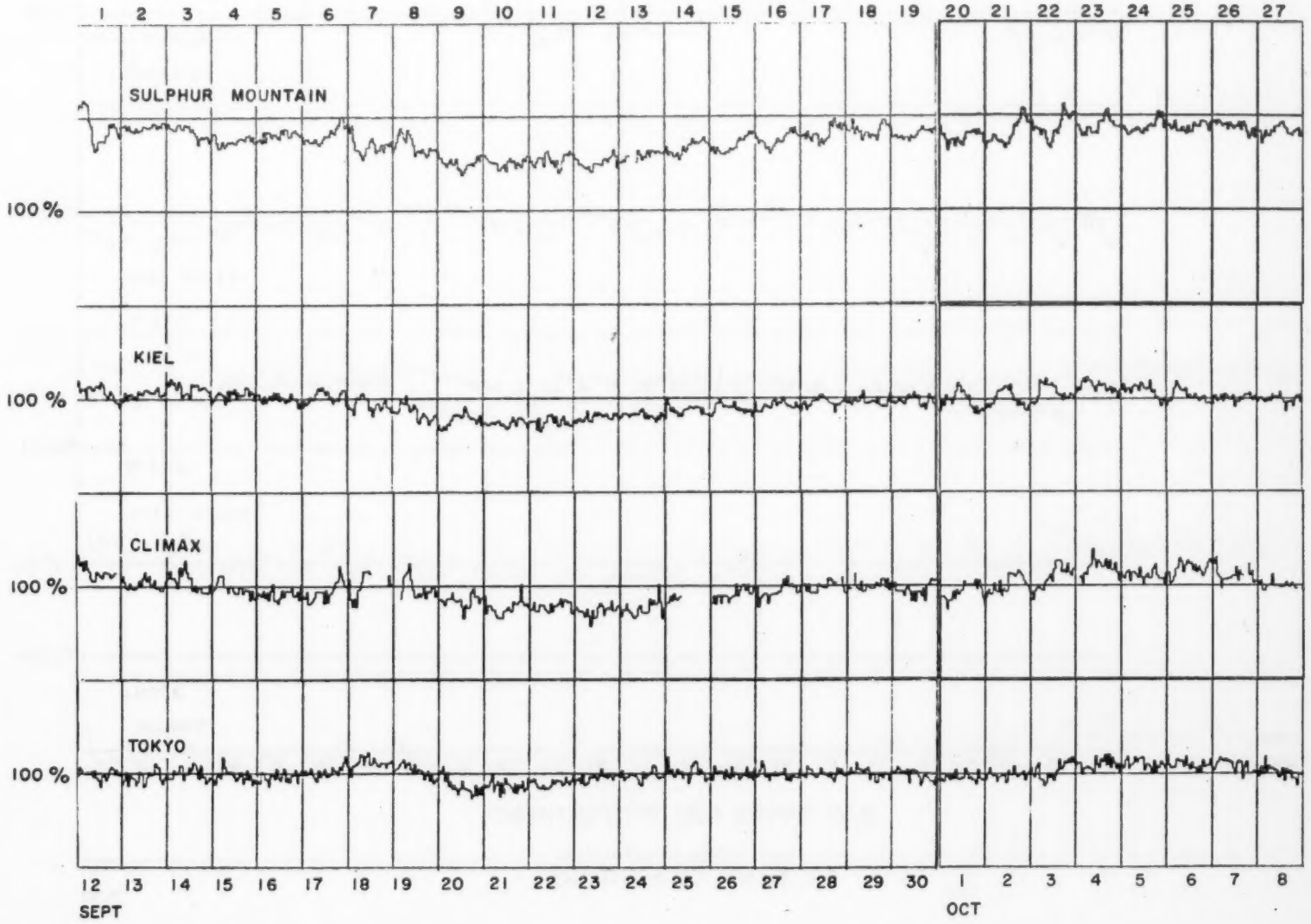
COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1958 (October 1976)



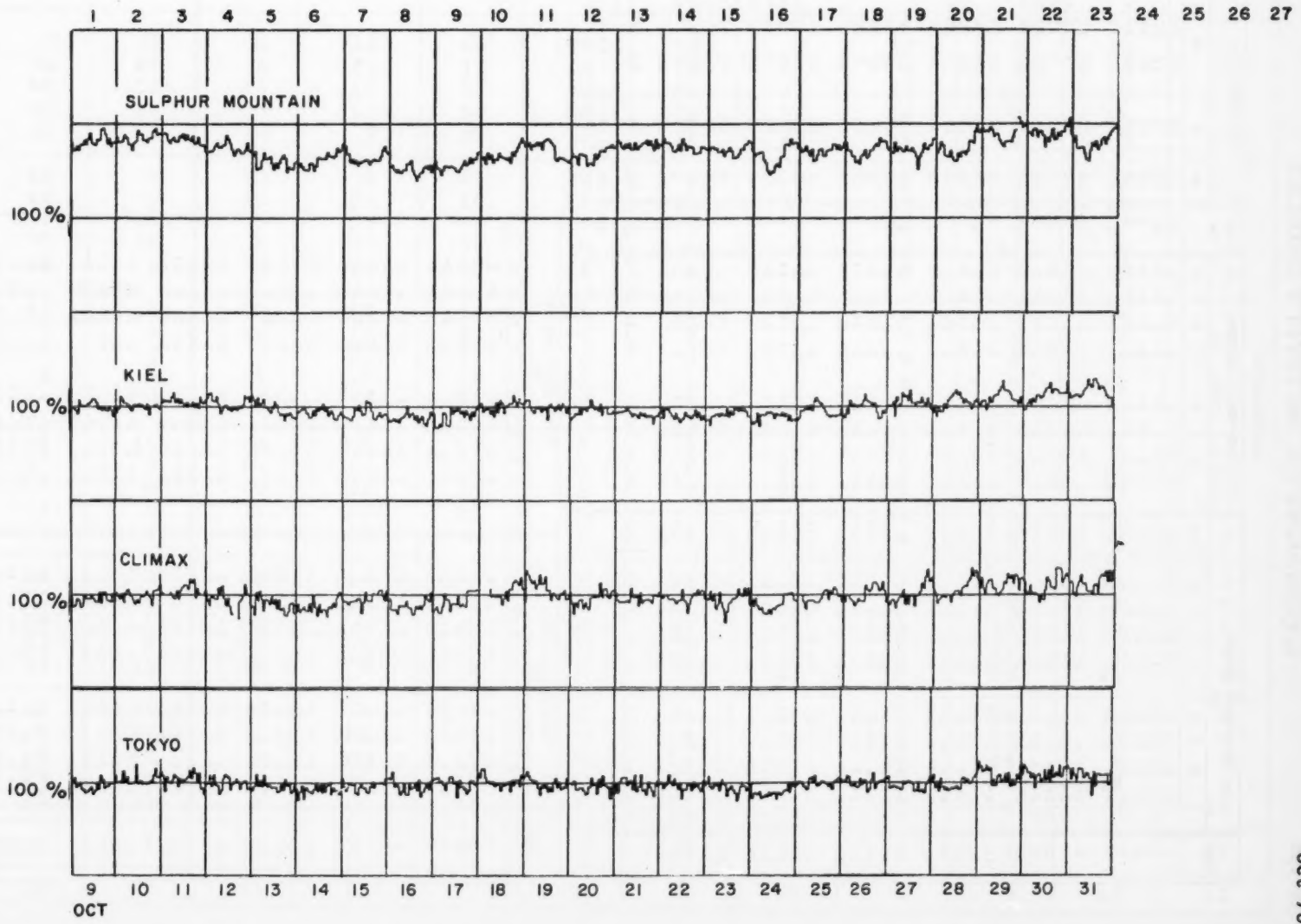
COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1957 (September 1976 - October 1976)



COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1958 (October 1976)



GEOMAGNETIC ACTIVITY INDICES

OCTOBER 1976

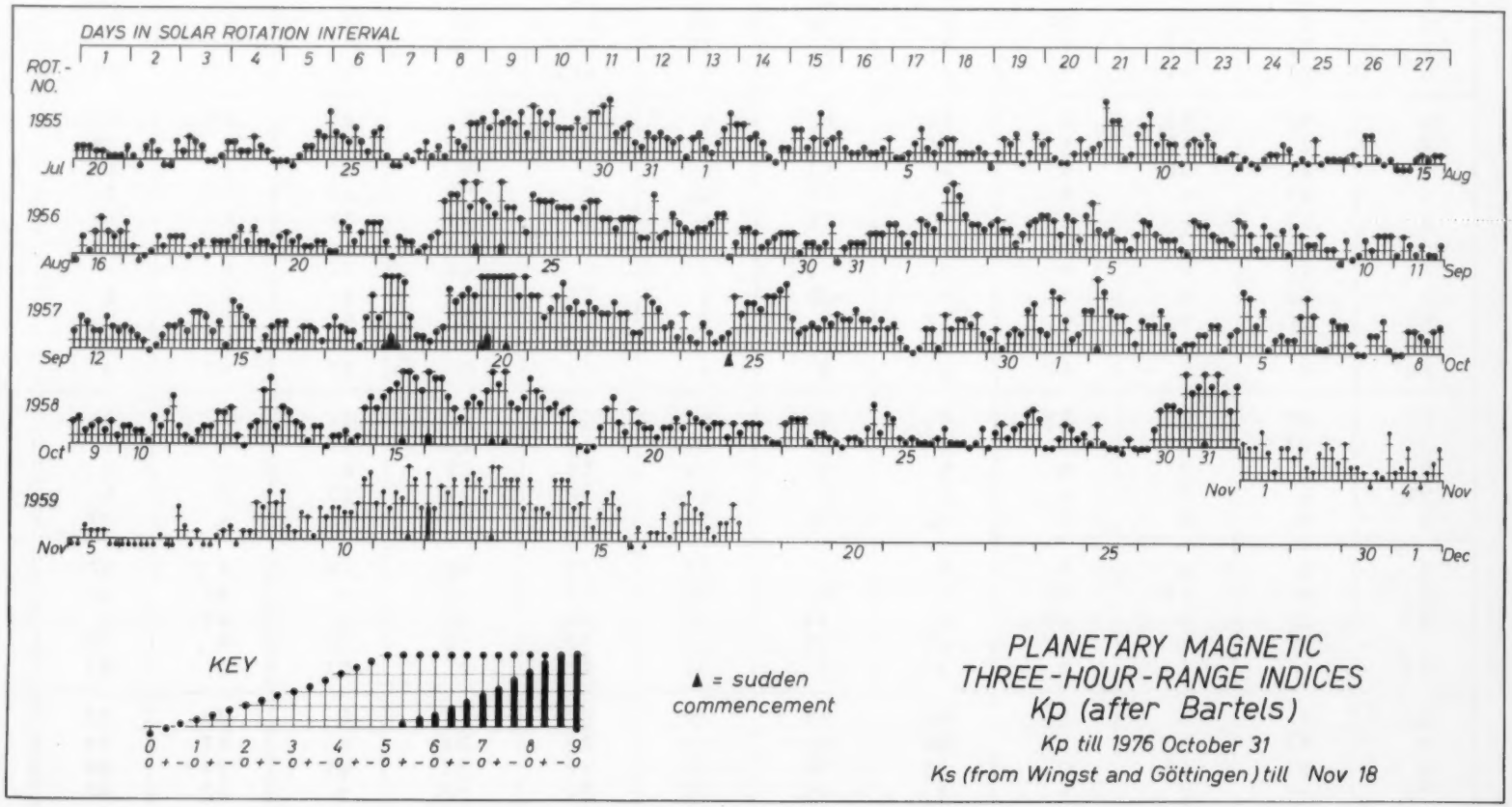
Day		Three-Hourly Indices Kp									Three-Hourly Indices Km								Ap	aa				Cp
		1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8		N	S	M		
1		2	2-	4+	4	3-	1+	2-	3+	21	2-	2-	4	4	3	1+	2	3	14	26	30	35	21	0.8
2	D	3+	5+	4+	3+	3	3	2	1	25+	3	4+	4	3+	3	3	2-	1+	21	29	34	42	22	1.1
3		3-	2+	2+	3+	2+	2-	1-	1	16+	2	2	2-	3-	3-	2+	0+	1-	9	17	17	20	14	0.5
4	Q	1	2-	2-	2+	2+	1-	2-	2	13+	1-	1	2-	2	2	1+	2-	2-	6	13	13	13	14	K	0.3
5		4+	4	2+	3+	1-	1+	2-	1+	19	4-	3	2+	3+	1	2-	2	1+	13	19	19	29	10		0.8
6		1+	3	4	3	1-	1-	3-	2+	18-	1	3-	3	3	1	1	3-	2	11	19	22	27	15		0.6
7	Q	2+	1	0+	0+	2-	2-	3-	1-	11-	2-	1-	0+	1-	2-	2-	3-	0+	6	13	9	8	13	KK	0.2
8	Q	0+	0+	2	2	2-	1+	2	2+	12	0+	1	2-	2-	2+	1+	2	2+	6	13	12	8	17	KK	0.3
9	Q	2	2+	1+	2-	2	1+	2	1	14-	2	2	1	1+	2	1+	2+	1	6	12	11	10	13	CK	0.3
10		2-	2-	1+	1+	1-	2+	2-	3-	13+	1+	1	1+	1+	1+	2+	2-	2+	6	16	11	10	17	K	0.3
11		4-	2-	1	1-	1+	2-	2-	3-	14+	3	1+	0+	1	2-	2	2	3-	8	18	12	15	15		0.4
12		3-	3	1	0+	2-	2	4	5-	19+	2+	3-	1	1-	2-	2+	4-	4	14	30	18	16	33		0.8
13		2-	3	3-	2	2-	1-	2-	2-	15	1+	2	2+	2	2+	1+	1+	2-	8	12	12	14	10	C	0.4
14		0+	1	1	1+	1-	1	3	4-	12	3+	0+	1	2-	1	2-	3	3	7	14	12	7	20	K	0.4
15	D	3	4-	4	4+	5+	5	5-	4	34	2+	3	3+	4-	5-	4+	4	4-	33	52	42	37	57		1.3
16	D	6-	5-	5-	4-	3	2+	3+	4-	31	4+	4	4-	3+	3	2+	3	3+	29	40	44	58	26		1.3
17	D	3+	4	5+	4+	5+	3+	3	4-	32+	3-	3+	5-	4	5	3	3+	3	30	44	45	42	47		1.3
18		5-	4	4-	3	3+	3-	3	2	26+	4-	3+	3	3+	3	3-	3	2-	19	32	20	29	24		1.0
19		0+	0	0+	2-	3	4-	2	1+	12+	0+	0	1-	2-	3	3+	2	1+	7	18	15	7	26		0.4
20		3	2	2-	2-	1	2-	2-	2+	15	3-	1	2-	2-	1+	2	2	2+	7	16	13	14	15		0.4
21		2-	3-	2+	2	2-	2	2	1	15+	1+	2	2-	2+	2	2	3-	1+	7	14	18	19	14		0.4
22	QQ	2	1+	2	2	2	1	1-	1-	12-	1+	1+	2	2+	2+	1	1-	1	5	10	18	18	9	K	0.2
23		2	2+	2+	2+	1-	1+	1+	1	13+	2-	2-	2	2+	1+	2-	2-	1+	6	12	13	16	10	CC	0.3
24	Q	1-	0+	1	1	1-	2-	3+	1+	10	1	1-	1+	1+	1+	2	3+	1+	6	13	12	9	16	KK	0.3
25	QQ	3-	2+	1	1-	1	1-	1-	1-	10-	2	1+	1+	1	1	1-	1-	1	5	10	10	13	7	CK	0.2
26	QQ	1	2-	1-	1-	1-	0+	1-	2-	7+	1-	1+	1+	1	1-	0+	1	2	4	9	13	11	12	CC	0.1
27		0+	1+	2	1	2-	2	3-	3	14	1-	1+	2-	1	2-	2+	3-	3	7	17	14	10	20	K	0.4
28	QQ	2+	0+	0+	1	2	2-	1	1+	10	2	0+	0+	1	2-	2	1+	2-	5	10	14	10	15	CK	0.2
29	QQ	1-	2	1-	0+	0+	0	1	0+	5+	1-	1+	0+	0+	0	1-	1-	1	3	6	8	7	7	CK	0.1
30		0+	0+	2-	3	3+	3+	3	5	20	0+	1-	2	3	3	3+	3	4	16	29	30	13	47		0.9
31	D	4	4+	5+	4+	5	4	3	4+	34+	3+	4-	5-	4-	5-	3+	3-	4-	34	52	42	50	44		1.3
																			12	20.5	19.5	20.0			0.56

Day	Three-Hourly Indices Kn								Three-Hourly Indices Ks							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	1+	1+	4	4	3+	1+	2	3	2	2	4-	4	3-	1	2-	3
2	3	4+	4	3+	3-	3	2-	1	3	4	4-	3+	3	3+	2	1+
3	2+	2	2	3	3	2+	1-	1-	2	2	1+	2+	3-	2+	0+	1-
4	1-	1	2-	2+	2+	1+	2-	2-	1-	1	2-	2	2-	1+	1+	2-
5	4-	3+	3-	4-	1	1+	2	1+	4-	3	2	3	1+	2-	2-	1+
6	1	2+	3	3	1	1	3-	2+	1	3-	3+	3	1-	1	3	2
7	2-	1	0+	1-	2-	2-	3-	1-	2-	0+	0+	1-	1+	2-	3-	0+
8	0	1-	2	2	2+	1+	2	2+	0+	1+	1+	1+	2+	1+	2-	2
9	2-	2-	1+	1+	2	1+	2+	1	2	2+	1-	1+	2	1	2+	1
10	1+	1	2-	2-	1+	3-	2-	2+	1+	1	1+	1+	1	2+	2-	2+
11	3	1+	0+	1-	2	2	2+	3-	3-	1+	0+	1	1+	2	2	3-
12	2+	3-	1	0+	2	2+	3+	4+	2	3-	1	1-	2-	2	4-	4-
13	1+	2	2+	2	2+	1+	1+	1+	2-	2	2+	2-	2	1	1+	2-
14	0+	0+	1	2-	1	1+	3-	3	1-	0+	1-	2-	1-	2-	3	3+
15	2	3	3	3+	5-	4+	4	3+	3-	3+	3+	4-	4+	4+	4	4-
16	5-	4	4-	3+	3	3-	3+	3	4+	4-	3+	3+	3-	2	3	4-
17	3-	3+	5-	4	5	3	3+	3	3-	3+	4+	4	5-	2+	3+	3
18	4+	4-	4-	3+	3+	3-	3	2-	3+	3	3-	3	2+	3-	3	1+
19	0	0	0+	2-	3	4-	2	1+	0+	0+	1	2-	3-	3	2	1+
20	3-	1	2-	2	1+	2+	2	2+	3-	1	1+	2-	2-	2	2	2+
21	1+	2+	2	2	2	2	2+	1+	2-	2	2-	2+	2	2	3-	1+
22	1+	1	2+	3-	2+	1	1-	1-	1+	1+	2-	2+	2	1	1-	1
23	1+	2-	2	3-	1+	2-	2-	1	2-	2-	2	2-	1+	2-	2-	1+
24	1	0+	1	1+	1+	2	3	1	1-	1	2-	2-	1+	2+	3+	2-
25	2	2-	1	1	1	1-	0+	1-	2	1	1+	1	1	1-	1-	1
26	1-	1+	1	1-	1-	0+	1	2	1	1+	2-	1	1	1-	1	2+
27	0+	1+	2	1	2	2+	3-	3	1-	1+	2-	1	2-	3-	3	3
28	2-	0	0	1-	2	2-	1+	1+	2	1-	1	1+	1+	2	1+	2
29	1-	1+	1-	0	0	1-	1-	1	1	2-	0+	0+	0+	1-	1	1-
30	0	1-	2-	3+	3	4-	3	4	0+	1-	2+	3	3	3+	3-	4
31	3	4-	5-	4-	5	4-	3-	4	4-	4	4+	4-	4	3+	3	4-

DAILY AVERAGE INDICES Ap

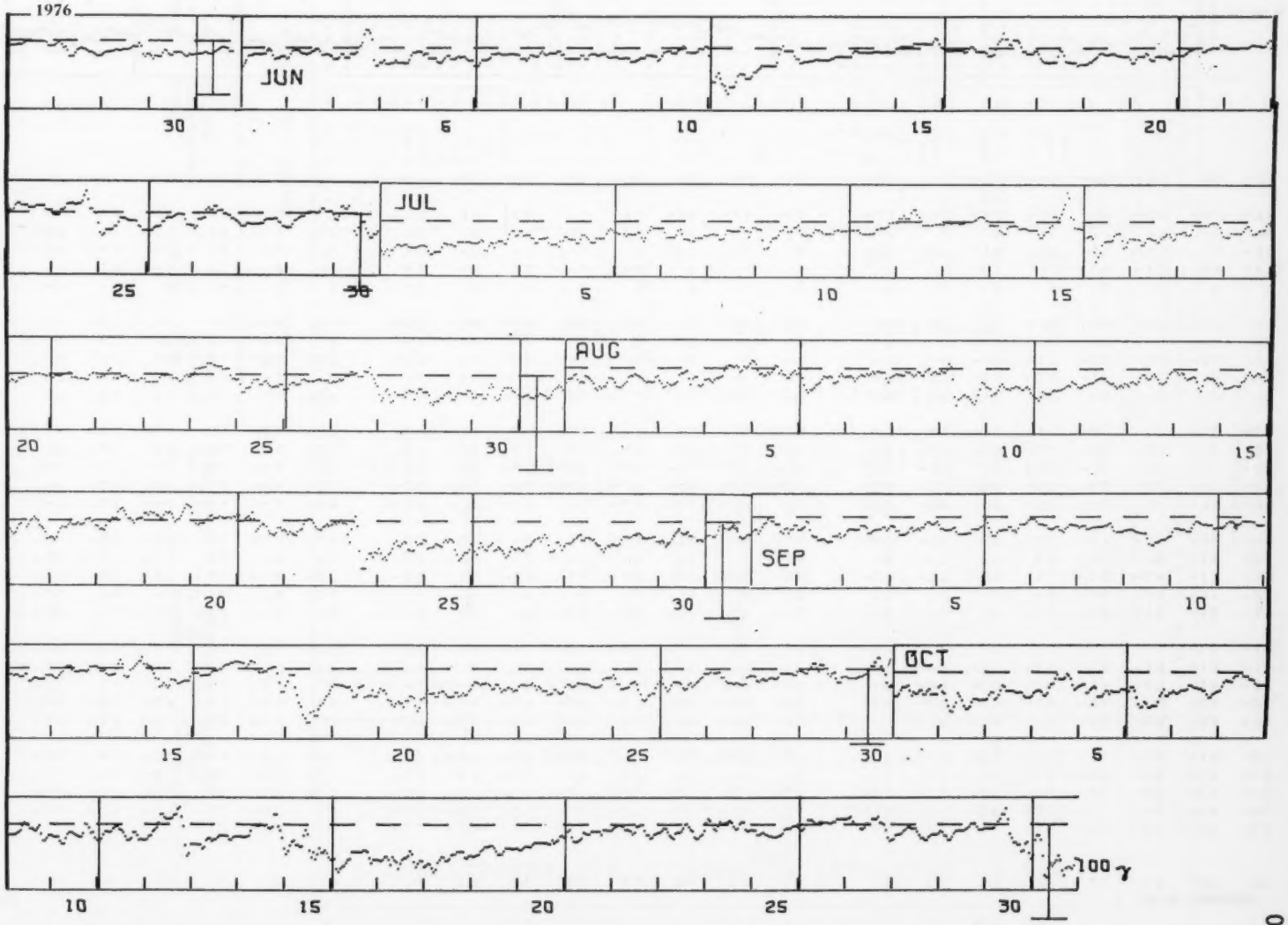
	1975		1976									
DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	7	32	4	23	17	107	10	6	18	8	10	14
2	36	27	4	20	32	16	58	6	9	8	24	21
3	65	12	15	16	27	44	94	12	12	10	10	9
4	41	13	10	12	12	30	20	20	14	5	14	6
5	22	8	9	8	15	27	14	20	6	6	9	13
6	11	7	13	8	33	30	8	7	6	5	7	11
7	10	4	11	21	26	27	10	13	9	5	10	6
8	7	18	5	29	42	14	10	8	13	4	7	6
9	37	16	4	24	36	16	4	4	10	12	6	6
10	20	8	47	24	32	12	6	6	6	9	5	6
11	13	5	40	12	27	12	11	26	4	5	4	8
12	9	3	13	17	26	9	7	7	5	3	8	14
13	4	3	9	22	11	13	6	4	4	3	5	8
14	3	6	11	17	14	15	4	3	6	4	10	7
15	4	9	7	8	15	4	5	4	19	2	10	33
16	6	14	10	6	18	8	5	5	16	6	6	29
17	17	9	14	14	20	5	4	14	5	5	10	30
18	7	6	9	22	13	2	3	21	6	4	33	19
19	8	6	8	25	11	5	12	4	6	6	20	7
20	9	3	11	19	8	2	19	5	4	5	51	7
21	18	9	20	14	5	5	11	3	3	8	24	7
22	50	10	23	14	3	19	11	3	4	5	17	5
23	8	7	20	4	5	8	14	4	5	30	12	6
24	13	2	21	3	4	16	6	16	4	25	7	6
25	15	18	10	4	4	9	9	18	9	24	24	5
26	14	34	5	9	138	6	6	7	4	18	13	4
27	5	31	6	26	35	11	5	6	8	13	12	7
28	9	15	5	20	15	10	14	5	16	10	5	5
29	29	15	6	34	15	17	22	5	18	6	10	3
30	36	11	9		12	10	17	29	19	6	9	16
31		7	29		10		9		7	5		34
MEAN	18	12	13	16	22	17	14	10	9	9	13	12

GEOMAGNETIC ACTIVITY INDICES


DAYS IN SOLAR ROTATION INTERVAL
ROT.-NO.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
1955
Jul 20 25 30 31 1 5 10 15 Aug
1956
Aug 16 20 25 30 31 1 5 10 11 Sep
1957
Sep 12 15 20 25 30 1 5 8 Oct
1958
Oct 9 10 15 20 25 30 31 Nov 1 4 Nov
1959
Nov 5 10 15 20 25 30 1 Dec
KEY
0 1 2 3 4 5 6 7 8 9
0 + - 0 + - 0 + - 0 + - 0 + - 0 + - 0 + - 0 + - 0 + - 0
▲ = sudden commencement
PLANETARY MAGNETIC
THREE-HOUR-RANGE INDICES
Kp (after Bartels)
Kp till 1976 October 31
Ks (from Wingst and Göttingen) till Nov 18

GEOMAGNETIC ACTIVITY INDICES

Hourly Equatorial Dst



Note the sensitivity indicator for each month on the last day of the month and also note that the zero reference level is different for each month.

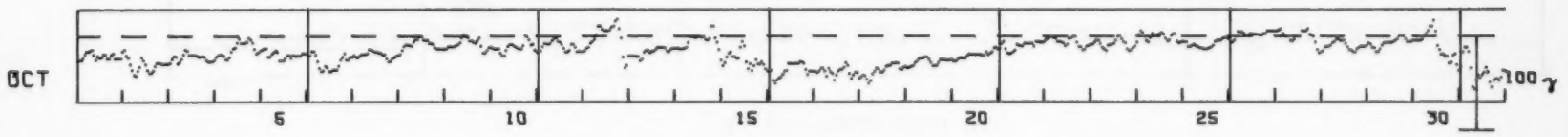
HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

OCTOBER 1976

NASA/GODDARD SPACE FLIGHT CENTER

(Time-UT) (Units-Gammas)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-20	-20	-23	-19	-16	-17	-15	-14	-21	-25	-24	-24	-22	-19	-20	-25	-24	-20	-18	-25	-23	-25	-24	-16
2	-14	-22	-24	-31	-37	-42	-43	-36	-32	-22	-27	-31	-37	-40	-38	-36	-31	-28	-28	-30	-31	-29	-29	-30
3	-28	-24	-21	-23	-30	-27	-24	-19	-14	-17	-21	-20	-21	-21	-22	-23	-23	-21	-23	-26	-28	-27	-27	-25
4	-22	-20	-19	-19	-22	-25	-26	-22	-16	-13	-16	-7	-3	-9	-3	-8	-6	-2	-5	-8	-15	-20	-17	-15
5	-14	-13	-14	-25	-23	-19	-17	-15	-18	-27	-27	-26	-23	-20	-20	-24	-20	-22	-22	-22	-21	-18	-19	-19
6	-22	-20	-16	-17	-21	-23	-35	-38	-36	-31	-34	-38	-38	-35	-36	-35	-31	-25	-22	-18	-26	-25	-22	-22
7	-20	-23	-24	-21	-19	-15	-19	-15	-14	-14	-17	-18	-17	-19	-19	-21	-21	-25	-28	-26	-24	-22	-21	-20
8	-19	-15	-11	-9	-11	-14	-12	-6	-4	-4	-1	-2	-5	-6	-5	-9	-9	-10	-13	-15	-15	-15	-14	-15
9	-14	-11	-12	-12	-13	-10	-9	-7	-2	1	-2	-3	-9	-9	-8	-9	-5	-2	-12	-19	-19	-15	-12	-12
10	-14	-15	-14	-15	-19	-22	-21	-15	-11	-9	-10	-12	-13	-14	-15	-15	-10	0	-2	-5	-11	-9	-16	-18
11	-20	-16	-11	-9	-9	-10	-8	-5	-3	-2	-7	-8	-10	-14	-16	-18	-15	-9	-9	-13	-18	-16	-18	-18
12	-10	-13	-12	-5	-3	-4	1	10	9	6	4	4	4	6	9	10	15	17	6	-4	-24	-35	-31	-21
13	-21	-21	-21	-23	-29	-27	-24	-17	-15	-16	-19	-16	-15	-14	-14	-12	-13	-13	-14	-17	-18	-14	-13	-13
14	-13	-13	-15	-14	-13	-14	-7	-1	-1	-3	-2	-1	-2	-3	-1	-5	-6	-3	10	10	-4	-8	-16	-27
15	-33	-26	-22	-16	-17	-23	-23	-25	-23	-12	-6	-14	-29	-36	-29	-36	-31	-25	-31	-30	-27	-31	-36	-38
16	-38	-36	-46	-51	-46	-44	-43	-40	-37	-36	-29	-30	-29	-29	-29	-29	-27	-29	-30	-37	-42	-37	-37	-38
17	-39	-40	-37	-34	-34	-35	-44	-34	-39	-41	-48	-41	-37	-35	-35	-33	-28	-32	-41	-46	-41	-38	-40	-46
18	-43	-41	-43	-47	-51	-47	-40	-37	-34	-36	-39	-39	-36	-32	-31	-31	-29	-30	-28	-30	-36	-37	-33	-32
19	-35	-33	-32	-31	-28	-26	-24	-24	-23	-22	-24	-26	-29	-33	-31	-31	-28	-25	-25	-26	-27	-26	-25	-25
20	-28	-28	-29	-23	-23	-25	-24	-21	-19	-21	-19	-21	-21	-21	-21	-22	-21	-17	-21	-18	-17	-13	-12	-15
21	-13	-8	-6	-15	-19	-20	-18	-17	-15	-9	-11	-12	-12	-8	-9	-8	-8	-8	-12	-5	-6	-8	-8	-7
22	-5	-3	-2	-1	-3	-4	-7	-6	-8	-9	-11	-9	-3	-2	-1	-2	-8	-13	-13	-16	-14	-11	-10	-9
23	-9	-7	-5	-6	-9	-15	-15	-17	-10	-9	-10	-8	-5	-1	0	-4	-7	-9	-15	-17	-15	-13	-11	-7
24	1	3	4	-2	-5	-5	-2	2	-1	-1	1	2	3	0	-4	-6	-5	0	2	1	-7	-9	-7	-6
25	-8	-6	-13	-13	-10	-9	-12	-13	-14	-14	-15	-15	-15	-13	-12	-10	-6	-5	-5	-5	-3	-2	-3	-5
26	-7	-8	-5	-1	4	4	3	1	-1	0	2	2	0	0	1	-1	-1	2	2	5	5	5	4	5
27	5	6	7	1	-1	-2	-2	-6	-7	-4	0	-1	-2	5	4	5	7	0	-1	-2	-8	-16	-19	-17
28	-16	-12	-11	-11	-10	-8	-5	-4	-3	-6	-5	-6	-9	-13	-15	-16	-18	-17	-14	-12	-11	-12	-11	-10
29	-8	-10	-13	-14	-13	-15	-14	-10	-8	-7	-7	-8	-3	-6	-5	-3	0	0	-1	-4	-7	-7	-6	-5
30	-6	-8	-6	-5	-4	-1	2	5	10	10	10	3	-12	-16	-21	-21	-23	-23	-30	-28	-21	-19	-32	-38
31	-32	-17	-12	-12	-15	-33	-56	-57	-46	-41	-46	-41	-38	-33	-39	-50	-55	-46	-45	-46	-48	-43	-36	-38



PRINCIPAL MAGNETIC STORMS

OCTOBER 1976

OBS. 2 letter IAGA code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	hr min (UT)	TYPE	SC - AMPLITUDES D(')	H(γ)	Z(γ)	MAXIMUM 3 HOUR - INDEX K DAY(3 HOUR PERIOD)	K	RANGES D(')	H(γ)	Z(γ)	UT END DAY	HOUR
BD	48.9N	1	08--	..	..	..	..	02(2)	6	23	85	39	02	18
PM	18.7S	1	07--	..	..	..	..	01(4)	5	4	70	40	02	17
GN	43.2S	1	04--	..	..	..	..	01(4)	5	10	65	65	02	16
CO	64.6N	2	00--	..	..	..	..	02(4)	7	160	1250	630	02	20
NE	55.1N	2	0028	SC	2	18	..	02(2,3)	6	35	94	102	02	20
HO	21.1N	14	17--	..	..	..	..	17(3)	5	8	105	29	18	14
JP	17.3N	14	17--	..	..	..	..	--	-	6	102	40	17	20
SH	14.6N	14	17--	..	..	..	..	--	-	5	112	24	17	20
UJ	13.5N	14	17--	..	..	..	..	--	-	5	105	35	17	20
AL	09.5N	14	17--	..	..	..	..	15(5,6)	5	5	117	31	17	20
HD	07.0N	14	1740	..	..	..	..	15(6)	6	5	129	20	18	21
AN	01.5N	14	17--	..	..	..	..	--	-	4	156	90	17	20
TV	01.1S	14	17--	..	..	..	..	--	-	3	192	106	17	20
KG	50.5S	14	18--	..	..	..	..	15(5,6)	5	--	--	--	18	12
CO	64.6N	15	05--	..	..	..	..	17(4,5)	7	229	1320	1070	18	21
SI	60.0N	15	05--	..	..	..	..	17(3)	7	110	480	520	17	15
NE	55.1N	15	0322	SC	1	4	..	17(3,5)	6	42	125	173	18	18
FR	49.0N	15	04--	..	..	..	..	15(5) 16(1) 17(3,4,5)	5	30	75	55	18	22
BD	48.9N	15	05--	..	..	..	..	17(5)	6	34	83	66	18	18
HU	00.0S	15	1120	..	..	..	..	15(5,6)	6	5	189	30	16	23
GN	43.2S	15	03--	..	..	..	..	17(5)	6	20	85	110	19	19
TO	40.7S	15	02--	..	..	..	..	16(4) 17(3,5)	5	22	110	48	18	13
SI	60.0N	17	0643	SC*	+ 6.2	+123.3*	+37.0	--	-	--	--	--	17	15
CO	64.6N	30	08--	..	..	..	..	31(3,4,5,6)	6	303	1200	760	01	12
SI	60.0N	30	07--	..	..	..	..	31(4)	7	70	500	460	01	10
NE	55.1N	30	05--	..	..	..	..	31(3)	6	37	103	128	01	12
HI	54.2N	30	16--	..	..	..	..	30(8)	6	26	205	70	31	23
BD	48.9N	30	06--	..	..	..	..	31(3)	5	20	94	37	01	12
HO	21.1N	30	00--	..	..	..	..	31(2)	5	6	95	16	01	10
JP	17.3N	30	05--	..	..	..	..	--	-	5	119	24	31	22
SH	14.6N	30	05--	..	..	..	..	--	-	4	113	20	31	22
UJ	13.5N	30	05--	..	..	..	..	--	-	4	135	25	31	22
AL	09.5N	30	05--	..	..	..	..	30(4,5,7) 31(3,6)	5	5	128	25	31	22
HD	07.0N	30	0630	..	..	..	..	31(4,6)	5	4	136	16	31	23
AN	01.5N	30	05--	..	..	..	..	--	-	4	136	39	31	22
HU	00.0S	30	1650	..	..	..	..	31(6)	6	8	153	33	31	22
TV	01.1S	30	05--	..	..	..	..	--	-	3	160	87	31	22
PM	18.7S	30	06--	..	..	..	..	31(3,5)	5	7	140	70	31	23
GN	43.2S	30	04--	..	..	..	..	31(5)	5	14	100	100	01	10
KG	50.5S	30	11--	..	..	..	..	31(3)	5	--	--	--	01	02
GU	04.0N	31	0057	..	..	..	..	31(5)	5	0	110	10	31	18

JP = Jaipur SH = Shillong UJ = Ujjain

Reports were received from the following observatories:

College Witteveen Alibag Annamalaingar Trivandrum Gnangara
Sitka Fredericksburg San Juan Hyderabad Huancayo Port Moresby Toolangi
Newport Boulder Honolulu Guam Apia Hermanus Port-aux-Francais

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

OCTOBER 1976

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS (by Dr. A. Romana)
The meaning of the station symbols is given in the IAGA-Bulletins nr. 32. Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

12 1400 B: SO VI AE; C: WI CF (si: A: WN; B: DO FU TL LM)

Solar-flare effects (sfe)
Effects confirmed by ionospheric or solar observations are underlined.

07 1219 - 1235 SO
13 1000 - 1007 LG
14 0656 - 0707 AE

RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

OCTOBER 1976

North Atlantic

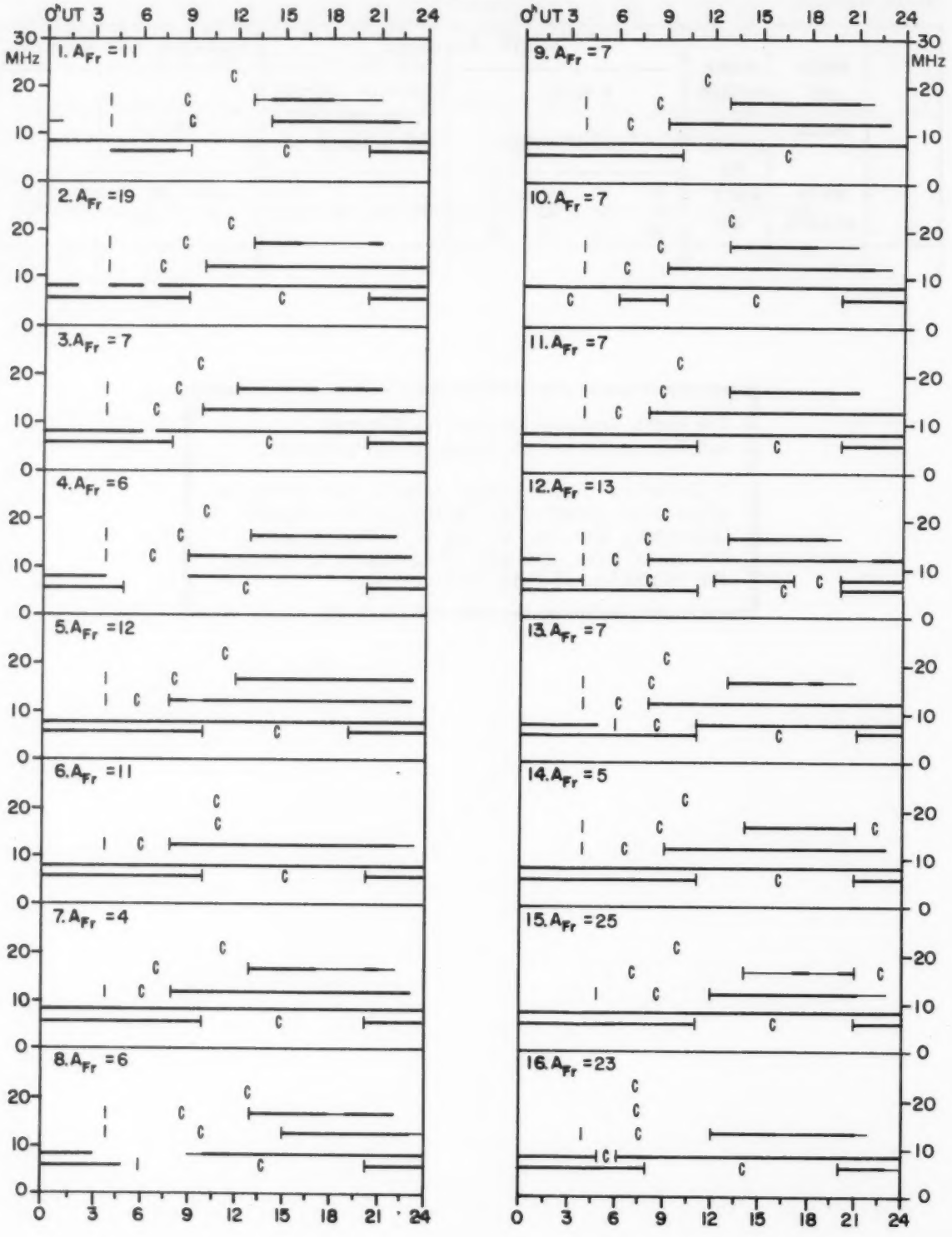
	WHOLE DAY INDICES NORTH ATLANTIC	ADVANCE FORECASTS (JC-REPORTS) FOR WHOLE DAY	NORTH ATLANTIC								GEOMAGNETIC INDICES	
			6-HOURLY QUALITY FIGURES				SHORT-TERM FORECASTS ISSUED ABOUT ONE HOUR IN ADVANCE OF				K_{FR}	A_{FR}
			00 TO 06	06 TO 12	12 TO 18	18 TO 24	02	08	14	20	HALF DAY (1) (2)	OBSERVED

The Radio Propagation Quality Figures and Forecasts are no longer being prepared.

A Historical Note: These figures and forecasts originally produced by Central Radio Propagation Laboratory and thus called CRPL Figures and Forecasts have been published regularly since the inception of this publication.

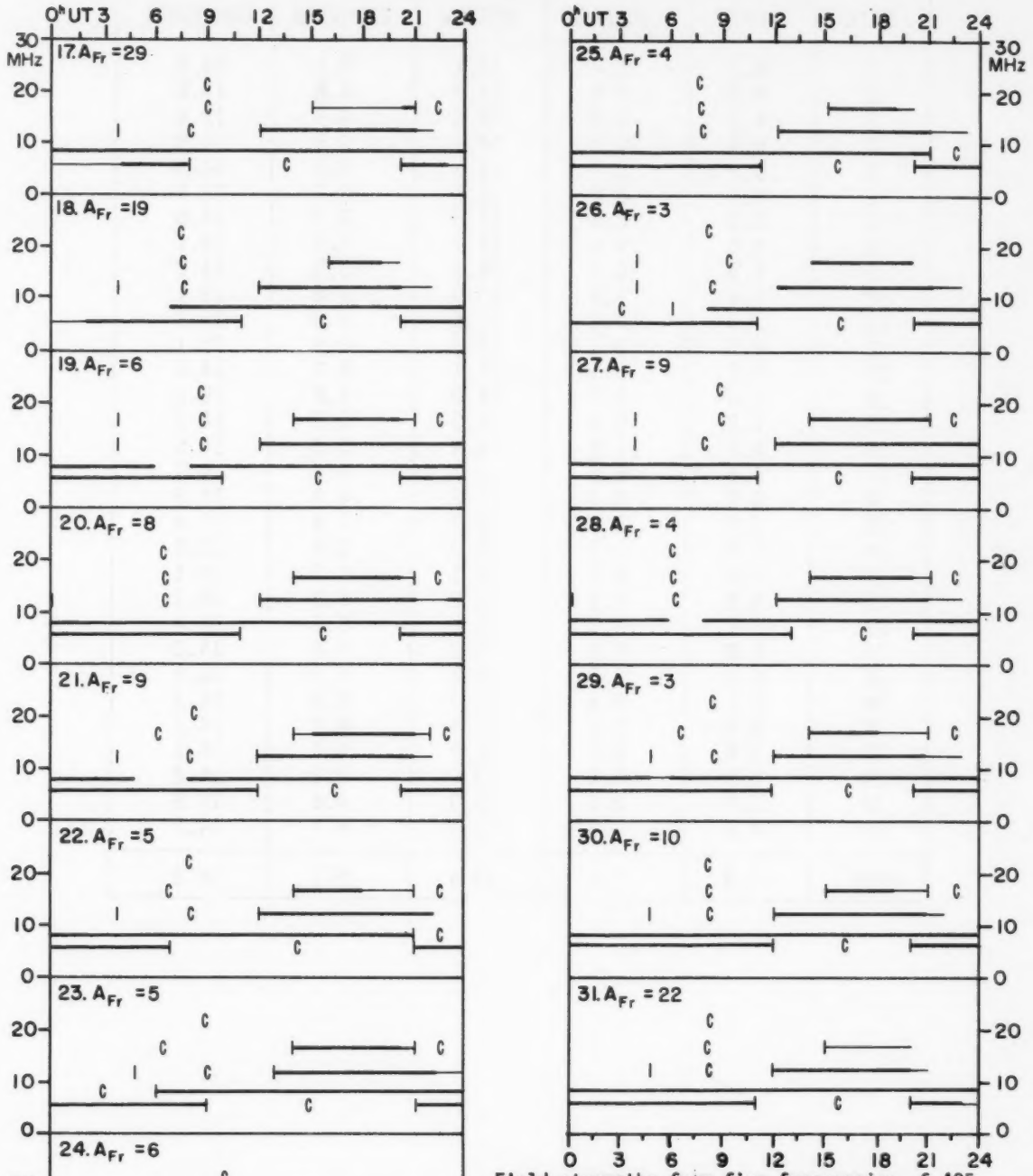
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

OCTOBER 1976



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

OCTOBER 1976



C = no value because of technical trouble or interference.

Field strengths from five frequencies, 6.425, 8.542, 12.813, 17.084 and 22.378 MHz, observed on a Lüchow.- Halifax circuit are represented above. Heavy solid lines represent field strengths ≥-12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line. Adapted from Observations by Deutsche Bundespost

RADIO PROPAGATION QUALITY INDICES

OCTOBER 1976

DATE	TOKYO	HALIFAX	MOSCOW	CANBERRA	BRACKNELL
1	5.7	7.2	13.1	5.1	14.0
2	4.9	7.5	13.9	4.8	13.5
3	6.3	8.4	13.4	4.9	13.4
4	6.4	10.1	14.9	5.5	14.9
5	5.8	9.7	13.9	5.1	14.3
6	6.1	8.4	14.5	5.5	13.8
7	6.6	8.5	14.6	5.3	14.5
8	6.8	9.0	14.7	5.9	15.1
9	6.8	10.1	14.7	5.8	15.2
10	7.6	9.9	13.9	5.8	15.1
11	7.0	10.2	13.6	6.0	15.1
12	6.7	9.1	14.0	5.5	15.1
13	5.9	8.9	14.1	5.2	14.5
14	5.8	9.5	14.0	4.8	15.0
15	5.8	8.1	14.5	5.5	14.8
16	4.6	7.2	13.9	5.0	14.5
17	4.6	6.6	12.7	4.6	14.1
18	4.9	7.3	12.8	4.7	13.6
19	5.2	8.0	12.7	4.4	13.9
20	4.4	7.7	11.9	3.9	13.6
21	4.9	8.6	13.1	4.7	14.1
22	5.2	8.1	13.2	4.8	14.3
23	5.9	8.9	13.2	5.6	14.4
24	5.8	9.5	13.2	5.6	14.2
25	6.1	8.8	12.2	4.3	13.9
26	5.7	8.8	13.3	5.0	14.3
27	5.8	9.6	12.3	4.9	14.2
28	5.8	9.3	12.9	4.4	14.1
29	5.9	8.4	13.5	4.8	14.2
30	5.9	8.5	13.0	4.6	13.9
31	4.6	7.9	12.0	4.7	14.2
MEAN	5.8	8.6	13.5	5.1	14.3

USCOMM-NOAA-ASHEVILLE 12-76-950